THE

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ELECTRICAL REVIEW.

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MUNICIPAL WIRING.

IN another column we give the concluding portions of what is regarded by electrical contractors as a test case relating to the legality of municipal wiring, viz., "The Attorney-General *v.* The Leicester Corporation." From the electrical contractor's point of view, the result is eminently satisfactory, and the judgment of Mr. Justice Neville is so clear and definite that the prospects of a successful appeal, should the Corporation decide to take the matter to a higher Court, are not very rosy. The plaintiff's contention was that the defendants were restricted, by the terms of the Electric Lighting Acts and of their provisional order, to the *supply* of electricity; and that in "carrying on the trade or business of providing, selling, supplying, erecting, installing, altering and repairing electric light cables, wires, fittings, electric bells, motors for working various machines, in connection with houses and buildings both within and outside their area," they were acting *ultra vires*. The plaintiff claimed a declaration to that effect, and an injunction to restrain the defendants from carrying on such trade or business in the future. The defendants argued that the words in Sec. 10 of the Act of 1882, reading "the undertakers may . . . . generally do all such acts and things as may be necessary and incidental to such supply," meant that they could supply and erect everything right up to the consumers' lamps, as the supply could not be said to be complete until it was taken up to the actual point of consumption.

Mr. Swinburne was called by the defence to support this absurd attempt to stretch the meaning of the term "supply." He had, however, to admit under cross-examination that any leakage on the lines up to the meter would be the concern of the supply authority, and any leakage beyond this point would be the concern of the consumer, and in the event of the latter, the supplier's remedy would be to cut off the current.

In the course of his judgment, Mr. Justice Neville pointed out that the Corporation was bound to give a supply, and if supply meant the supply right up to and including the consumers' lamps, it could be compelled to wire the consumers' premises free of cost. We take it that it naturally follows that it would have to keep all installations in proper repair, and to supply new lamps to replace those burnt out. This is an important pronouncement, and is only another illustration of the generally recognised fact that one cannot eat one's cake and have it too. Assuming for the moment that the Corporation should appeal successfully, that is to say, obtain a reversal of the judgment, not only would every occupier in the area be able to demand a free wiring—really free, not hire-purchase—but all those who have already paid the Corporation for wiring or installation work would be entitled to claim their money back. At least this, it seems to us, is the logical result of the position

which would be created. On the other hand, assuming the present judgment to stand, the Corporation, it is admitted, has carried out lighting and other contracts, and has charged for them without having any legal powers to do so. There is, therefore, the cheerful prospect that the consumer will claim the return of his money, and that the official auditor will then surcharge the members of the Corporation with the amount refunded. It is an interesting position.

There is another point which must not be overlooked. The Electric Lighting Act, 1909, confers a practical monopoly of the supply of electricity upon authorised undertakers. Now, if "supply of electricity" included the supply of fittings, the ratepayers of a district in which the local authority obtained a new provisional order, might find themselves compelled to get their fittings only from that source! This, of course, is a fanciful argument, and we rejoice that, in view of Mr. Justice Neville's very emphatic decision, there is no need to have recourse to it.

The delivery of this judgment has led a West-Country correspondent "J. M." to lay before us particulars of the manner in which a certain municipal corporation is taking a most mean and grossly unfair advantage of one of its own electrical contracting ratepayers. The private trader is in any case placed at a disadvantage if his local authority enters into competition with him. But he is in a far worse position when that authority, through its electrical department, avails itself of business information that he has taken the trouble to obtain for himself, and goes behind his back to his customer. Our correspondent writes not what is mere hearsay, but concerning what he has personally suffered, when he asks what Mr. Justice Neville would say about electric departments of other corporations carrying out bell work and wiring for private plants—and these outside their own boroughs—and doing so in so unprincipled a way that when they are rung up on the telephone by a contractor who wants information about supply of current for power plant for which he is quoting, and he is compelled to give the name of the works for which the machinery is intended, such information is used by the supply department of the corporation for its own ends. We are informed that a representative has been immediately sent to the prospective consumer offering to sell him the necessary machinery—and German machinery at that—thus not only competing with the contractor for the order, but using the British contractors' proportion of local rates so to do.

Would the Municipal Electrical Association, with all its belief in the rights and abilities of municipal departments to carry on electrical installation work, for a moment justify such procedure as this? Would any municipal electrical engineer come out into the light and attempt to justify such an action of his own? We wish municipal electrical organisations success so long as they conduct their enterprises on sound and fair lines, but we believe that the spirit of common fairness that possesses the British public will lead to a heavy and firm foot being brought down upon those who use their monopolistic position to take advantage of a practically powerless individual. We say this at the risk of being once more charged with being anti-municipal. It is said that too many of our electrical contractors are not conspicuous for their stability, and that frequently their work is bad—we have already shown that it is not always the weak firms who are to blame in this way—but we can imagine their position becoming far less stable, and the quality of their work suffering still more, if such mean methods as that alluded to by our correspondent were allowed to pass into common practice.

Electricity Works Tables.

With this issue we enclose our Annual Table of Electricity Works of the United Kingdom, and we take this opportunity of expressing our thanks to the great number of central-station engineers and managers, and consulting engineers, whose kind assistance alone enables us to compile the data and statistics embodied therein.

We are aware that the life of a station engineer is a strenuous one, and that the correction of statistical returns is not the kind of occupation that he would choose to fill his leisure moments—if he ever has any leisure; moreover, the feverish enterprise of modern electro-technical journalism has multiplied similar demands upon his complaisance, and the fact that we have published these tables continuously for 17 years, unfortunately carries little weight as an extenuating circumstance. Consequently, we feel somewhat diffident in making our annual application for statistics, and we arrange our data-forms in such a manner that they can be corrected with the minimum of trouble. We do not think it is statistics of this kind that lead members of the M.E.A. to desire a Central Bureau to be set up for collecting and distributing data.

The utility of such tables has at times been questioned; indeed, one of our central-station friends on this occasion, while furnishing the data asked for, added a remark to the effect that they were only a nuisance, and that he himself neither had nor could see any use for them. This comment, unique in our experience, is robbed of its apparent acerbity by the irrepressible geniality of its author; but it may be well to point out that while the engineer of an undertaking may not be materially concerned with the particulars relating to the other 450 undertakings, there is a vast multitude of other engineers, manufacturers, contractors, &c., to whom a knowledge of the names of engineers, pressures of supply, frequency and phase, prices charged, and other data relating to the various works is constantly necessary, and the fact that these details are made available in convenient tabular form in all probability spares the station engineer in innumerable instances the trouble of answering inquiries on these points.

That the tables are found useful and convenient is amply proved by the circumstance that we find them posted on the walls of offices of every description, in all parts of the country, central-station offices included; we feel, therefore, that the trouble to which our friends are put, and the labour and expense which we ourselves incur, in their preparation are fully justified, and we trust that our readers will continue to find them of service in the conduct of their businesses.

The M.E.A., 1910.

Once more a Municipal Electrical Convention has come and gone; and the Glasgow Convention, with its meetings, visits and social functions, which ended on Friday last, represented a more than full week to those who took it seriously.

The Association itself has rendered signal service to its members, and the annual *réunion* which it provides is a feature the value of which, we think, is fully recognised.

But can it be said that the members extend the same appreciation to the instructional side of these meetings? Judging by the quality of the papers submitted last week, as also by the absence of entries for the travelling studentship, we are afraid that this is, unfortunately, not the case.

No doubt, it may be urged that the opportunities of discussing technical, and especially electrical, subjects, have multiplied very much in recent years, and that the responsible heads of central stations are sufficiently engaged nowadays in problems other than engineering, but whatever may be urged in extenuation, the fact remains that the members owe it as a duty to the Association to provide the best possible value in technical or commercial subjects for discussion at these yearly meetings.

We congratulate the Council on having introduced a departure from usual procedure at one meeting, when discussions were initiated on suitable topics, and we would further urge all members to bear in mind the new president's request for suggestions with a view to extending the sphere of usefulness of next year's Convention, which will in all probability be held at Brighton. Contributions of a brief and practical nature, to be printed for circulation before the meeting, on the lines of the National Electric Light Association's "Question Box," have been sometimes advocated, and the suggestion may be worth considering.

Canada Again.

It will not be for want of urging on the part of those who are intimately acquainted with the position, if British manufacturers do not get their share of business in Canada. Lord Grey, the Governor-General, who is now in this country on a private visit, devoted his first utterances upon landing at Bristol to the greatness of Canada's future and to the advantage that would accrue to our manufacturers if we would send out our best agents to study Canadian requirements. He did not hesitate to say that our commercial houses are not taking advantage of their opportunities to the same degree as are the corresponding houses of France, Germany, and the United States. Our unfavourable position in the matter of Consular representation is once again brought into prominence by his Lordship's reference to the strong force of salaried U.S. Consular agents who are scattered all over the Dominion—men who are business agents whose one object is to secure the Canadian market for United States exports. The resources at the disposal of Mr. Grigg, our Board of Trade's representative, are shown by Lord Grey to be quite inadequate to meet the requirements of British trade. Our readers already know something of the invaluable services rendered to British traders in the Canadian reports of Mr. Grigg. There should be placed at his command a number of qualified commercial specialists who could examine into and report upon the position for particular trades and the conditions that have to be faced. His Lordship alluded to the annual exhibition that takes place at Toronto in August, when British manufacturers who are making the requisite effort will be able to meet the best representatives of the people of Ontario. He regards such occasions as affording admirable opportunities for British commercial houses to show their enterprise.

Medical Fees in Accident Cases.

It cannot be too often emphasised that a medical man who is called in on an emergency to assist an injured man, cannot necessarily recover his fees from the employer of the injured man. Again, where an accident happens, the person ultimately responsible for the accident is not necessarily liable to the medical attendant who is summoned. At the Lambeth County Court on May 12th, a medical man claimed payment by the London Electric Supply Corporation of some £96, fees due for attendance on a person injured while carrying out a sub-contract with the defendant company. This person, by coming into contact with a live wire, received a wound in the side some 16 in. long, dividing the muscles as well as the skin. The plaintiff, after affording him first aid treatment when brought to his house, suggested that he should be taken to a hospital. The wounded man refusing, he was taken to his own house, where a nurse was secured and the patient treated by the plaintiff, in the belief that the defendant company, through its local superintendent, had undertaken to pay all charges. The same superintendent had some years previously given the medical man concerned in this case instructions to treat another injured employé of the company, and that bill was paid. Another medical man who had assisted in the case and was present at a conversation between the superintendent and the plaintiff, gave evidence that the superintendent told the plaintiff to do everything possible, and that the company would be responsible for the fees. On behalf of the defendant it was denied that the superintendent had any authority to retain a doctor for the company, and the superintendent denied having done so. The case ended in the action being dismissed with costs.

In delivering judgment, the County Court Judge stated that the case was an unfortunate lesson for medical men, as it would make them careful as to what attention they gave to an urgent case. Possibly, he added, some explanation of his reasons for ruling in favour of the defendant company, despite the well known readiness with which undertakings to be responsible for payment are given in such circumstances, but if so they are not reported in the *South London Press*, from which our information is derived. The evidence of the injured man himself was apparently not available, because the final outcome of his injury would seem to have been the development of insanity. In the case above-mentioned it is clear that if an action were brought in behalf of the injured man, the medical fees could be recovered as part of the damages; but as—to use a legal phrase—there was no privity of contract between the medical practitioner and the company, the latter could not be held liable.

Copper.

The mid-monthly statistics (Messrs. H. R. Merton's) show visible supplies at 105,371 tons, a reduction of 1,444 tons for the fortnight. These supplies have fallen 8,084 tons since February 28th, when they stood highest, giving an average rate of decline of 2,309 tons per month. Even at double or treble this rate the quantity would take a considerable period to wipe off. The reduction is traceable to stocks at English ports and afloat from Australia, French stocks having appreciated slightly (184 tons). Supplies from North America to this country appear to be up a little, and Spain and Portugal register 2,045 tons for the fortnight (average per month for preceding 12 months, 1,709 tons). Much cannot, however, be gathered from the mid-month returns.

The hardening of the price does not appear to have been a solid movement. If copper continues to decline over the next two months, it will be more in accordance with the information to be gathered from statistics.

It is reported in the financial Press that the chairman of the Arizona Copper Co., Ltd., has left Edinburgh for New York, to reopen negotiations for the inclusion of the company in the projected American copper merger.

Government Contracts Placed Abroad.—A Parliamentary paper has just been issued giving a statement of all contracts made in the United Kingdom for manufactured articles for the several Government departments in the year ending March 31st, 1909, either with contractors outside the United Kingdom or with contractors or agents who obtain the articles from abroad. The list includes the following articles:—Admiralty: Carbon brushes, £55; cells, £866; flexible metallic hoses, £2,420; fuses, £155; carbons for special lamps, £1,090; Nernst burners, £47; stereo telescopes, £1,973; tools, gauges, &c., £312; wireless telegraphy apparatus, £1,544; and grinding and shaping machines and other yard machinery, £4,600. War Office: Aluminium, £875; apparatus—wireless telegraphy, £500; track laying, £281; electric light carbons, £623; copper, ingot, £123,549; lamps, electric, arc, and parts, £274; brazing, £132; telephones, &c., £46. Post Office: Telephone exchange installations and telephonic apparatus, £35,014; telegraphic apparatus of various sorts, £451; fire alarm apparatus (Gamewell system), £304; electric light apparatus and fittings, £1 952; electric light carbons, £677; ebonite goods, £580; spelter, £515; tin, £1,315; machinery and parts, £129; tools, of special design, £300; Ambroin goods, £225; paper for condensers, £177; motors and parts, £112; petroleum jelly, £304; cells, glass, Leclanché, £125; tannic acid, £456; and stamp cancelling machines, £2,988.

British Control in Bahia Blanca.—American Consul-General R. M. Bartleman, of Buenos Ayres, in calling attention to the nearly finished electric power installation of the Buenos Ayres and Pacific Railway at Bahia Blanca, which will be the most perfect for its size in Argentina, says the completion of this important enterprise shows the needs of Bahia Blanca to be constantly increasing, with its steadily growing population and rapidly growing trade. Each year it becomes the distributing and shipping centre for a greater and greater area of rich and fertile territory. "The completion of the Rosario, Puerto Belgrano Railway will undoubtedly stimulate the growth of Bahia Blanca, providing direct rail communication between that city and Rosario (population, 176,075), across the fertile and highly developed Province of Buenos Ayres (population, 1,730,232). It will also be the entering wedge into the hitherto absolute control of Bahia Blanca by the English-owned railways. There is probably no port in the world, outside the dominions of the United Kingdom, so completely controlled by British capital and interests as is the important city of Bahia Blanca, whose fine harbour and shipping facilities will be powerful factors in enabling it to become one of the world's great ports." Are *we* downhearted?

INCORPORATED MUNICIPAL ELECTRICAL ASSOCIATION: GLASGOW CONVENTION.

(*Continued from page* 985.)

THE Glasgow Convention of 1910, which concluded on Friday last, will be remembered for the excellent weather conditions which prevailed from start to finish, proving such a marked contrast to those of the previous year.

The opening day's proceedings were referred to in our last issue; the mid-day luncheon at the City Chambers, when some 400 guests were royally entertained by the Tramway and Electricity Committee, and the evening reception and conversazione in the same building in the evening, when well over a thousand guests received the hospitality of the Town Council, will remain as most enjoyable memories to those who were luckily invited.

Wednesday's proceedings in Edinburgh necessitated an early start, a special train conveying the members and delegates to the Scottish capital. Of the turbine papers, which were read in abstract and discussed during the morning, it may be said that whatever the peculiar conditions which led to the use of exhaust steam turbines at Edinburgh, in conjunction with the Water of Leith main sewer for condensing purposes, the general adoption of such turbine plant would be a very questionable advantage.

Some engineers were evidently agreed that a saving in both capital and running costs would be made by adopting ordinary high-pressure turbine plant, instead of perpetuating indefinitely less efficient reciprocating engines in conjunction with low-pressure turbines.

After the meeting the Corporation entertained the delegates to luncheon, Lord Provost Brown presiding, and later in the afternoon an opportunity was given for inspecting the Edinburgh turbine plant at the Macdonald Road Station.

The works of Messrs. Bruce Peebles & Co., at East Pilton, were also thrown open to the members, while the breezes of the Firth of Forth, and the famous bridge, which still remains a masterpiece of its kind despite American attempts to go one better, attracted many of the visitors.

Thursday was the busiest day of the week. In the morning a departure from the ordinary routine was made, discussions on (*a*) the advantages of continuous records of costs and steam consumption, and (*b*) cheapening of the cost of mains and services, being initiated, and resulting in a lengthy debate.

The former discussion elicited many opinions favourable to simplifying rather than elaborating records and tests, especially in the case of large plants. As one speaker remarked, coal is sometimes cheaper than financial charges, and this may be lost sight of in striving after low costs.

Certain tests and records are obviously necessary in any central station, but for the rest, rather more attention to the consumers' meters would, no doubt, give better results to the engineer.

Much attention is evidently being bestowed on the cost of mains and services, which was dealt with later in the morning, but apparently no radical reduction in expenditure can be looked for under present conditions.

At the conclusion of the meeting an adjournment was made to the Grosvenor Restaurant for lunch, and two series of visits occupied the remainder of the afternoon. One of these included the shipyard of Messrs. Beardmore, Ltd., at Dalmuir, where much interest was shown in the large gas engine plant utilised for generating electricity and driving air compressors, &c. This plant is operated on producer gas, and we gathered that record costs were obtained. The engine and boiler departments at Dalmuir are housed in one shop —probably the largest building of the kind which we have seen—which is fully equipped with electrically-driven cranes, tools, &c., for the construction of marine turbines, water-tube boilers and similar work, examples of which for naval vessels were shown to the visitors. The Yoker station of the Clyde Valley Power Co., with its 3,000-KW. turbines, and the Partick Electricity Works were also visited. The latter is combined with a destructor, and the feature of interest was the new 1,000-KW. Belliss-L.D.M. generating set, recently installed, but the tea, which the Corporation thoughtfully provided for its somewhat famished visitors, claimed possibly more attention.

In the evening the annual dinner of the Association took place at the Windsor Hotel.

The toast of the evening, that of the "Incorporated Municipal Electrical Association," was reserved for Sir John Ure Primrose, who, in an eloquent speech, referred to the value of the interchange of views which took place at such conventions. He paid a tribute to the foresight of Mr. S. Z. de Ferranti—"the apostle of high intensity"—whom he recognised as being present; to-day had amply vindicated the soundness of his deductions years ago.

Looking into the future, he hinted that even the Clyde at Glasgow, might, through the beneficial influence of electricity, yield salmon as of old, and the apprentice of the future, as in the past, stipulate that he should not be compelled to eat it more than three times a week.

Friday morning was devoted to the business meeting, and concluded the work of the convention; some particulars of this are given elsewhere. In the afternoon a small party of visitors, tempted, no doubt, by the glorious weather, enjoyed a sail down the Clyde and through the Kyles of Bute, the scenic beauties of which formed a happy conclusion to the arduous labours of the week.

Extension Turbines.

THE paper by Mr. Bremner embodying the results of the installation of a mixed-pressure turbine at the Burslem Electricity Works is peculiarly opportune, inasmuch as it indicates quite clearly the actual saving in running costs brought about by the employment of this type of machine in conjunction with existing non-condensing reciprocating engines. The paper will probably be of considerable interest to the engineers of central stations with non-condensing engines, of which a far larger number exist than is generally supposed, since it is almost the first time that the resulting economy has been demonstrated under actual working conditions, and non-technical directors and committees are far more likely to take heed of practical proofs than of the statements of manufacturers, however true these may be. Mr. Bremner shows that he has reduced the cost of fuel per unit of electricity from 0·315d. to 0·212d., or more than 30 per cent., though, of course, it must not be forgotten that the total cost of production, allowing for interest and depreciation charges on plant, will probably not have been diminished to a corresponding extent.

The development of the turbine in recent years has placed many central station engineers in a difficult position; even though they may be morally certain that the best course would be to scrap their reciprocating plant and install high-pressure turbines, they may be very reluctant to propose so drastic a step to their committees. The exhaust or mixed-pressure turbine offers a convenient solution to their dilemma.

There are one or two points, however, in which the Burslem installation is at a disadvantage in demonstrating the possible saving, which, in other stations, might be considerably greater. For instance, the cost of coal delivered in the bunkers at the station is 7*s.* 3d., whereas, if this were doubled, as it would be in some towns, the actual monetary economy would be very much increased. Further, the vacuum in the condenser seemingly never exceeds 27 in., and, as is shown in the curve given in the paper, if this were raised to 28 in. the output could be increased 12 or 13 per cent. with the same steam consumption when working with exhaust steam. This would seem to indicate the necessity of a higher outlay on the condenser plant, a point on which it is impossible to lay too much stress. The steam consumptions of the turbine given in Table I are interesting, but the increase of nearly 30 per cent. in steam used per KW.-hour at half load when running on live steam is somewhat surprising in an impulse machine. The admission pressure when working with low-pressure steam is not stated, but if this is in the neighbourhood of atmospheric pressure, the consumption given in the table of 38·8 lb. per KW.-hour with a vacuum of only 26·21 in. is astonishingly low, though here again the increase in steam required with a diminishing load is very marked. The curves shown in fig. 1, p. 1021, indicate very clearly what combination should be employed for any particular output, and similar curves should be prepared in all installations of this type, as it is quite easy to see that a wrong combination could largely affect the resulting economy. On the whole, it may be said

that though the Burslem authorities may be highly satisfied with the saving effected by the new plant, turbine manufacturers are confident of even greater economies in similar stations.

Mr. Newington's paper on the exhaust-steam turbines at the Edinburgh central station is very interesting in contrast with the previous one, and perhaps may lead some to think that it is a question of comparing the mixed-pressure turbine with the exhaust turbine. This is, however, not the case, since the former should obviously be installed where the output of the new machine is comparable with the combined outputs of the existing engines, but in stations like that at Edinburgh where there is practically always sufficient exhaust steam available for the turbines, the pure low-pressure turbine is preferable, as it will naturally be of a higher efficiency for its work. In any case, however, where it might conceivably come to pitting the exhaust against the mixed-pressure turbine, it must be remembered in favour of the latter that even when the old reciprocating engines are discarded the turbine can be run comparatively economically as a pure high-pressure turbine.

The saving in the cost of fuel per KW.-hour at Edinburgh after the installation of the exhaust turbines is curiously similar to that at Burslem, and the close agreement in two widely dissimilar cases should be considered very satisfactory. The steam consumption of the turbines is about 38 lb. per KW.-hour at full load (1,200 KW.), and this could probably be reduced to some extent at the present day for similar machines, so that it may be anticipated that when additional power is required and further turbines are installed, the saving will be even more marked. At the same time, to prevent an erroneous idea being formed regarding the economy due to the exhaust turbines, it should be kept in view that some of the reciprocating engines now exhaust into the condenser, and this partially accounts for the gain in efficiency. The description of the condensing arrangements given in the paper is very interesting, and it is satisfactory to hear that the bold policy of the engineers in this matter has proved so successful.

Extensions to Existing Electricity Supply Stations by Means of Mixed-Pressure Turbines.

By Ashton Bremner, *Chief Electrical Engineer, Burslem.*

(*Abstract.*)

Burslem is situated in the Potteries, an industrial area where, for the most part, only motors of small powers are required, and steam for heating and drying is a necessity. Here, if electricity is to compete at all with other motive powers, the scale of charges must be very low indeed; consequently, more than ordinary care was taken that the plant at first installed was suitable to the probable demand, and easily extended.

Starting in 1905 with one 100-KW. and one 200-KW. Howden-Dick, Kerr sets, it was apparent that, as the load increased, additional plant must be provided, and so a similar set of 350-KW. capacity was installed in 1907.

Further extensions being necessary, the writer early in 1908 advised that a 600-KW. Belliss-Siemens mixed-pressure turbo-generator be installed, the plant being so designed that it could be used either as auxiliary power on exhaust steam or as stand-by plant on live steam. The turbine develops approximately the same power as the sets which supply it with steam. The reciprocating sets can be run either non-condensing, condensing, or in connection with the turbine, or the turbine can be run as a separate unit.

The following Table gives the results of the official test of the turbine carried out at the makers' works, the speed being 1,850 R.P.M.:—

Belliss Mixed-Pressure Turbine.

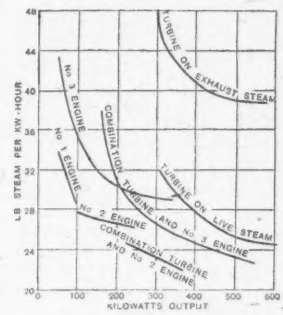
Number of H.P. nozzles open.	Total steam per hour in lb.	KW.	Steam per KW.-hour.	Vacuum, Inches.
0	15,000	610	24·6 Live steam.	27·27
1	14,870	607	24·5 "	"
2	15,350	607	25·3 "	"
3	15,650	607	25 8 "	"
0	9,910	310	32 0 "	27·33
0	18,750	762	24·6 "	26·65
0	22,520	580	38 8 Low pressure.	26·21
0	16,700	418	39·9 "	26·77
0	15,440	321	48·6 "	27 33
0	13,830	300	46·2 "	26·9
0	2,650	No load	Live steam.	28
0	2,910	with	"	27
0	3,080	excita-	"	26·12
0	4,500	tion.	Low pressure.	27·5

The following Table gives results of tests taken with the plant installed at Burslem, and shows what proportion of the load the turbine was developing from the exhaust steam.

Time.	Vacuum.	Reciprocator.	No. 4 turbine.	Total.
4·35	27·25	256·0 KW.	84·8 KW.	340·8 KW.
5·5	27·25	252·0 KW.	67·8 KW.	319·8 KW.
5·35	27·12	204·0 KW.	94·3 KW.	298·3 KW.
6·5	27·20	275·0 KW.	141·0 KW.	416·0 KW.

Fig. 1 gives the result of tests of the steam consumption per kilowatt-hour under different conditions and varying loads.

A firm of turbine builders states that with the exhaust steam of a reciprocating engine producing 500 KW. running compound



Vacuum 27 in.

Fig. 1.

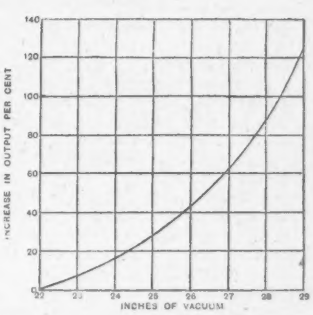


Fig. 2.

non-condensing, with steam at the stop valve at a pressure of 160 lb per sq. in., the exhaust turbine will produce an additional 375 KW. less, say, 5 per cent. required to drive the condensing plant.

The following Table gives the results of the working of the power-house plant of a large engine-builder's works:—

Plant running.	KW.-hours.	Period.	Average pressure, lb. per sq. in.	Average superheat.	Average vacuum, inches.	Water per KW.-hour, lb.	Reduction by exhaust turbine. %	Fuel per KW.-hour, lb.	Reduction by exhaust turbine. %
Engine alone	296	1 hour	155	130°F.	25	21·7	18·45		
Combination	495				27½	17·7			
Engine alone	910	3 hours	160	120°F.	27	21·2	15·67	3·75	19·2
Combination	960				27½	17·9		3·03	
Engine alone	186,100	50 days	Average station conditions.					5·76	24·48
Combination	147,000	40 days						4·33	
Engine alone	385,000	½ year						5·81	26
Combination	473,986							3·93	

The power house was equipped with one 300-KW. and one 400-KW. triple-expansion engine running with a steam pressure of 160 lb. and vacuum of 26 in., the steam being superheated from 50° to 150° F. At the beginning of 1908 an exhaust-pressure turbine was installed which, running on the exhaust of one of the engines, was able to cope with the maximum load of the station and at the same time to give economical running on lighter loads.

The fuel consumption seems high on the long-period trials, but in these trials meal times and nights are included, when the load is extremely light, so that the stand-by losses are necessarily high. The very large saving shown in one case in favour of the turbine is due to the fact that at this period of the year the combination was very often able to run on one boiler where the engine equipment required two. The fuel is slack of poor calorific value, and though the maximum load is about 350 KW., the mean load day and night is only approximately 200 KW., or during the full working hours about 300 KW.

A turbine of the Westinghouse-Parsons type of 368 KW. capacity installed at the Gloucester Railway Carriage and Wagon Co.'s Works is fitted with high and low-pressure steam chests, the latter capable of dealing with 9,000 lb. of exhaust steam per hour, from which 210 KW. is obtained, the rest of the load being carried on high-pressure steam.

In this turbine the governing is effected by giving the low-pressure governor valve a *lead* over the high-pressure, so that the full quantity of exhaust steam is always used before high-pressure steam is admitted.

In order that a mixed-pressure turbine may run to the best advantage a high vacuum is necessary. Fig. 2 shows the increase in output from exhaust turbines with increased vacuum.

The following Table shows the works costs at Burslem for the month of April, 1909, with gain due to installing the turbine during the month of April, 1910, in pence per unit generated:—

	Reciprocators only. April, 1909.	Combination. April, 1910.
Coal	·244d.	·184d.
Water	·071d.	·028d.
	·315d.	·212d.

A saving of 32 per cent. Calorific value of coal = 12,700 B.TH.U. Cost per ton, 7s. 3d. into bunkers.

Exhaust Steam Turbines and Condensing Plant at McDonald Road Station.

By Frank A. Newington, *Chief Electrical Engineer, Edinburgh.*

(Abstract.)

The plant described in this paper consists of exhaust steam turbines connected to direct-current dynamos and condensing apparatus.

When the station was designed the intention was to use cooling towers, but this scheme had to be given up, as it was thought the towers would be unsightly and might cause a nuisance.

The Water of Leith main sewer, which crosses under McDonald Road about 180 yd. from the generating station, was found to have an average flow of about 750,000 gallons per hour, and it was, therefore, decided to utilise the sewer for condensing, and to extend the generating plant by means of exhaust steam turbines.

The sewer is 6 ft. 6 in. in diameter inside, and 22 ft. below the level of the road. A shaft, 26 ft. in diameter, formed of cast-iron segments bolted together, was sunk, and four suction pipes, each 18 in. in diameter, and one discharge pipe, 26 in. in diameter, were laid from the shaft to the station. Straining screens are fixed in the shaft just in front of the suction pit. The end of the discharge pipe in the sewer is water-sealed, so that a siphon action is maintained.

Four 14-in. motor-driven centrifugal circulating pumps, each with a capacity of 182,400 gallons per hour, are placed in the basement of the boiler house, and deliver into a common pipe 26 in. in diameter, to which is connected a Bailey & Jackson rotary strainer. From this the circulating water passes through the four condensers back through the rotary strainer, and then it is returned to the sewer. The centrifugal pumps are 16 ft. above the average level of the water in the sewer, and the highest point of the pipe system is 30 ft. above the pumps or 46 ft. above the sewer water level, but on account of the pipes forming a closed system, the average head against which the pumps work is 15 lb., that is, 8 lb. suction head and 7 lb. delivery head.

As there is a very considerable quantity of air in the water, two air-extracting pumps have been provided; one extracts the air on the suction side of the pumps, the other the air on the delivery side. By this means the siphon action is maintained, and the vacuum at the highest point of the pipe system averages about 20 in.

Four surface condensers of the Contraflo type are used, each having a cooling surface of 3,750 sq. ft. The air-pumps are of the Edwards type, with three-throw cranks. The feed-water force pump is driven off the same shaft. One line of each air-pump delivers the condensed steam to the force pump, the other two lines working dry.

Each condenser and air-pump will deal with 45,600 lb. of steam per hour with the circulating water entering the condenser at 60° F., and leaving at 90° F., with a guaranteed vacuum of 28 in. with the barometer at 30 in. The ratio of the weight of circulating water to condensed steam is 40 to 1. The air-pumps are driven by motors through Renold chains.

The use of sewage for condensing has proved thoroughly successful. The quantity of water is sufficient for a maximum output of about 10,000 kw. The chief troubles are efficient straining and getting rid of the air in the water.

The straining arrangements in the shaft consist of three iron grids each 5 ft. high and 3 ft. 6 in. wide, with vertical bars spaced ⅜ in. apart. These are kept clean by scrapers automatically worked by a small motor. A certain amount of scraping by hand is necessary at the time of top load. The Bailey & Jackson rotary strainer, which is placed between the pumps and the condensers, consists of a cast-iron wheel, 9 ft. in diameter and 12 in. wide, with 12 spokes. Between the spokes are fitted grids full of small holes and about 4 in. deep, the holes being about ·12 of a sq. in. in area. The wheel is surrounded by a cast-iron casing which is divided vertically into two portions, which form the delivery and discharge chambers.

The water enters the strainer by an inlet pipe on the delivery side, passes through half of the grids in the wheel, and leaves by an outlet pipe on the delivery side. After passing through the condensers it re-enters the strainer by an inlet pipe on the discharge side, passes through the other half of the grids, but in the opposite direction, and finally leaves the strainer by an outlet pipe on the discharge side. The wheel is rotated slowly, and the discharge water washes off from the grids everything that had been deposited on them on the delivery side, and carries it back to the sewer. The leakage of water from the inlet chamber to the outlet chamber is considerable.

The temperature of the water in the sewer averages about 60° F. in the winter and 70° F. in the summer. As we are prohibited from returning the water to the sewer above 90° F., the range of temperature for condensation is small, and so the quantity of circulating water required per pound of steam condensed is large.

At present only two exhaust steam turbo-generators have been installed, but there is sufficient steam from the reciprocating engines for two more exhaust turbines, and these will be added as soon as the increase in output requires them.

The turbines are of the Rateau type, running at 1,250 revolutions per minute. The guaranteed output of each set is 1,200 kw., about 2,200 amperes and 560 volts, with 45,600 lb. of steam per hour at a pressure at the inlet to the turbine not exceeding 14·7 lb. per sq. in. absolute, and at the exhaust 1·3 lb. absolute, say, 27½ in. vacuum. This output is easily obtained in everyday work. This means that the exhaust steam from two of the 780-kw. reciprocating sets is sufficient to give an output of 1,200 kw. from one of the turbo-generators. Live steam is connected to each turbine through a reducing valve in case the supply of exhaust steam at any time should not be sufficient. The machines will give 25 per cent. overload for a short period.

The rotor of each turbine has eleven wheels, with 265 blades on each wheel. The clearance between moving and stationary parts is considerable, and there has not been any indication of stripping.

The dynamos were built by Messrs. Brown, Boveri & Co.; they are four-pole machines, and are separately excited by a small dynamo at the end of the shaft. Copper brushes are in use on one machine. The commutator of the other machine has been altered to give increased ventilation, and carbon brushes are fitted. There was some little trouble at first with commutation, but this has been overcome, and both machines are now running well, especially the one fitted with carbon brushes. This commutator keeps very cool, being only 42° F. above the temperature of the air after six hours' full-load run. Each commutator has 100 bars, giving a pressure of about 22 volts per bar.

Automatic atmospheric valves are placed in the exhaust pipes between the reciprocating engines and the turbines. The conditions under which these valves have to work are very severe. They are balanced to open at about ·3 lb. above atmospheric pressure, so they are always nearly in equilibrium, consequently they are very apt to chatter and so damage the faces. The valves first supplied were quite unsuitable. Those now in use, however, are working very well, the improvement being due to very strong construction, careful fitting of all moving parts to prevent all backlash, and the use of a special dash pot which admits air freely on the upward movement of the valve, but by means of a non-return valve, only allows it to escape very slowly when the valve is closing.

Oil separators of the Blake type are placed in the exhaust pipes between the reciprocating engines and the turbines, which extract the greater part of the oil. The feed water is further treated by the Davis Perrett electrical process for freeing it from oil. The quantity of electricity used is one unit for every 1,000 gallons of water treated. After 12 months' steaming the boilers show hardly a trace of oil.

There is not the least difficulty in running the turbo-generators in parallel with the other dynamos. The old dynamos are shunt wound, and the turbo-generators compound wound. The whole regulation is done by the switchboard attendant by means of the shunt resistances. The only point to be careful about is to see that steam is not escaping past the atmospheric valves, which would mean waste. In order to prevent this, indicators have been fitted just above the atmospheric valves, and directly any steam passes the valve an electric circuit is closed which rings a bell on the switchboard. The switchboard attendant then puts more load on to the turbine and so reduces the pressure of the steam in the exhaust pipe.

The condensing plant is sufficient to deal with the steam from reciprocating and exhaust turbines of 11,000 kw. The capital cost was as follows:—

		Per kw.
Sewer shaft with suction and discharge pipes ...	£5,600	£·5
Circulating water and exhaust steam pipework and oil-extracting plant	6,000	·5
Rotary water strainer	2,000	·2
Four condensers, circulating and air pumps ...	11,000	1·0
	£24,600	£2·2
Two 1,200-kw. turbo-generators with switchboard	£13,800	£5·7

The economy caused by the exhaust steam turbines and condensing plant is shown by the following figures, which are for similar periods in 1908 when only reciprocating engines were used without condensation, and in 1910 with exhaust steam turbines and condensation. The same price of coal has been taken for both periods.

In the costs per unit generated for the 1910 figures, the units used by the condensing plant have been deducted.

As only three of the boilers are fitted with superheaters, the amount of superheat is quite small.

	1908.	1910.
Duration of test	3 weeks	3 weeks
Date	Jan. 16th to Feb. 6th	Jan. 20th to Feb. 9th
Units generated	715,491	888,644
Units used by condensing plant...	—	43,045 = 4·8 %
	715,491	845,599
Load factor	22·8 %	25·1 %
Plant factor	89·6 %	76·9 %
Lb. of water per unit generated...	39	22·2
Lb. of water evaporated per lb. of coal	6·67	6·6
Lb. of coal per unit generated ...	5·85	3·3
Maximum output, kw.	6,227	7,021

Costs per Unit Generated.

			% *Saving.*
Fuel	·251d.	·167d.	33·4
Oils and stores	·009d.	·004d.	50
Water	·027d.	·006d.	78
Salaries and wages	·054d.	·047d.	
Repairs (estimated)	·057d.	·057d.	
	·398d.	·281d.	30 %

At present at the time of top load in the winter months, three or four reciprocating engines are exhausting direct to the condensers, so the economy will be increased when the other two turbines are installed. The combination of reciprocating engine and turbine is as economical as high-pressure turbines, and obviates all necessity of scrapping the old sets until these are worn out.

The price of the sewer shaft and pipework in the roadway, £5 per KW., is considerably less than cooling towers would have cost.

Discussion.

Messrs. Newington and Ashton Bremner's papers were jointly discussed.

Mr. Robinson (Richardsons, Westgarth & Co.) said that exhaust steam turbines were now being proposed for use with reciprocating engines in many cases where they were unsuitable. The addition of such turbines often led to perpetuating old plant which, in the interests of efficiency, ought to be scrapped. His firm had recently introduced a new type of air pump, which was giving satisfactory results. It worked with a steam and a water jet, also a water spray; the arrangement was a straight-line one, using a rotary pump for circulating the water for the spray and jet, and a two-stage centrifugal pump for the condenser discharge. A vacuum of about 29 in. could be obtained.

Mr. C. H. Wordingham said it seemed strange that so many stations had, with the advent of the exhaust turbine, discovered that they could work condensing. As regarded the Edinburgh arrangement, one would expect the sewage water to corrode the condenser tubes. The exhaust steam turbine duplicated the switchgear and resulted in a double unit which might prove awkward to run.

Mr. S. Z. de Ferranti (President-elect, I.E.E.) said that prospective users of exhaust steam turbines often did not appreciate the value of the steam they used. With a view to obtaining the utmost value from the steam, it would pay to buy a more costly and more highly efficient turbine than those which were supplied commercially at the present time. The exhaust steam turbine was an excellent makeshift at the present time—but it did not represent finality. While in some cases a financial gain might be shown by adding exhaust turbines, it often turned out that scrapping old plant and starting afresh with new would really give better results. The difficulty was the expense of scrapping plant, and he suggested that one way of overcoming this would be by the co-operation of the manufacturer.

Mr. C. E. C. Shawfield (Wolverhampton) was of opinion that a saving of capital would have resulted if the Edinburgh reciprocating plant had been abandoned, and h.p. turbines installed right away. At Edinburgh the complete cost of an exhaust turbine (inclusive of pipes, &c.) was some £9,650, and 2,760 KW. was obtained from the reciprocating engine and turbine combined. Now a 3 000-KW. h.p. turbine set would not cost more than about £8,500, and as it would operate on 17 lb. of steam, as against 19 lb. of steam per KW. in the former case, there was a saving in working of, say, 2 lb. steam per KW.-hour. He had himself found it cheaper to install a 2,000-KW. high-pressure turbine, than to add an exhaust turbine to three 500-KW. reciprocating sets.

Mr. T. W. Bloxam (Belfast) said as regarded commutating troubles, it was proposed to reconstruct the brush gear of his own Brown-Boveri machines. At Belfast, where the water from a tidal river was in use for condensing, they had arranged with a view to clearing the pumps, pipes, &c., that one pump should discharge backward through the other, the check valve being held up to allow the reverse flow.

Mr. Birkett (Southend) questioned whether there was any real advantage in using sewer water for condensing, as it was limited in amount. He had had difficulties with the surface condensing plant at Southend, and had adopted a Ledward evaporative condenser, giving a 25-in. vacuum; this could easily be extended—it was designed to deal with 60,000 lb. steam per hour, and ran at less cost than the fan for the cooling tower of the original 30,000-lb. surface condensing plant.

Mr. S. L. Pearce (Manchester) said it should be recognised that the work obtainable from steam was in proportion to the heat to be got out of it, and there was no particular difference between exhaust and live steam turbines except as regarded the range of pressure over which they worked. A good vacuum was evidently a first consideration, and this was the limitation, as it was easy to spend more on obtaining the vacuum than it was worth. He could not agree that the exhaust steam turbine was the most suitable for extension. It was not certain that a triple-expansion engine would work more economically coupled with a turbine than independently. He had considered using an exhaust turbine with his large reciprocating engines, but as the saving seemed problematical, he had decided to extend on ordinary lines.

Mr. H. Faraday Proctor (Bristol) suggested that it would pay to utilise the old and inefficient plant for stand-by purposes, rather than to scrap it and install new plant. The old plant was good enough for such a purpose, even though less efficient.

Mr. Purse (Watford) thought it was possible to devote too much attention to working costs and to neglect capital costs; both papers claimed a saving of 30 per cent. approximately, but this was misleading, as neither mentioned financial charges.

Mr. Gregory said he considered that the radial type of brush gear introduced by the Westinghouse Co., and that supplied by Messrs. Siemens, had solved commutator troubles, and the President mentioned that at St. Andrew's Cross Works, Siemens plant with carbon brushes, and Brown-Boveri plant with copper brushes (1,600-KW. sets), were both running satisfactorily.

In reply, Mr. Newington said no trouble in the way of corrosion of tubes had arisen from using sewage for circulating at Edinburgh. On paper, the high-pressure turbine possibly did show a lower steam consumption than the combined reciprocating and turbine plant, but it meant in his case scrapping modern high-speed plant, and he considered that this would have been more costly than what had been done. The limitations of the sewer were fully realised, and the Corporation had now agreed to use cooling towers with condensing plant for future work. The figures given were from a test under ordinary working conditions.

Annual Report.

The annual report of the Council shows that the membership of the Association now stands at 416, made up as follows:—Committees (members), 170; chief electrical engineers (members), 191; honorary members, 3; chief assistants (associate members), 11; assistants (associates), 41. There is an increase of 26 on last year's total.

The revenue account shows decreased expenditure under nearly every heading, and an increased revenue. The net result is a surplus for the year of £93 10s. 1d., or more than double that of last year. The balance-sheet shows a margin of assets over liabilities of £485. The finances of the Association are in a satisfactory condition.

The Sub-Committee on Physical Standards of the Engineering Standards Committee, upon which the Association is represented, has in hand at the present moment a standard specification for bayonet-socket electric lampholders, and a specification for metal-filament lamps.

The Council having been approached by the Municipal Tramways Association with a view to a Joint Committee being formed, to discuss the question of standardising the method of charging for energy supplied for traction purposes from combined undertakings, a small Sub-Committee was appointed, consisting of Messrs. McElroy and Spencer, representing the Municipal Tramways Association, and Messrs. S. L. Pearce and T. Roles, representing the I.M.E.A. A proposal has been drawn up by the Council's representatives, and will be considered in due course by the tramway representatives.

Regarding financial organisation and administration, sundry meetings were held last summer, but the Local Government Board has taken no further action in the matter; and as the Council's desire is that the present law shall not be amended, the question remains at present in a condition that is considered satisfactory.

The Sub-Committee appointed to deal with economic wiring has been in negotiation with a Sub-Committee of the Cable-Makers' Association, who, in accordance with the suggestions of the Sub-Committee, have drawn up a specification for a class of conductor which it is considered would satisfactorily meet the requirements of the Fire Insurance authorities, and enable installations of this class to be carried out in an efficient manner at a minimum of cost. The Association's representatives on the Wiring Rules Committee of the Institution of Electrical Engineers (Messrs. Edgcome and Christie), have reported on the matter to this Committee, and the question is coming up for their consideration when this section of the Rules is being dealt with.

The Council regrets the lack of interest shown by the Associates with regard to the Scholarship of £10 offered annually for the best paper on some approved subject. This year again no entries were received, and the award has only been made twice in four years.

A large majority of municipal electrical undertakings in the kingdom are represented by their Committee or their engineer. There are, however, still some undertakings not represented at all, and the objects of the Association will not be fully attained until representatives of the engineering and municipal side of every undertaking in the United Kingdom are included in its membership.

At the annual general meeting, which took place on Friday last, the first business was the election of officers and seven candidates to fill the vacancies on the Council during 1910-11, and resulted as follows:—

President.—*J. Christie, Brighton. *Vice-Presidents.*—*G. Wilkinson, Harrogate; *O. E. C. Shawfield, Wolverhampton. *Past Presidents.*—S. E. Fedden, Sheffield; H. Talbot, Nottingham; S. L. Pearce, Manchester; W. W. Lackie, Glasgow. *Hon. Solicitor.*—*Ald. G. Pearson, Bristol. *Hon. Secretary.*—*H. Faraday Proctor, Bristol. *Hon. Treasurer.*—*J. E. Edgcome, Kingston-on-Thames. *Council.*—*J. H. Rider, London; *R. A. Chattock, Birmingham; *A. H. Seabrook, Marylebone; *S. J. Watson, Bury; F. M. Long, Norwich; C. Furness, Blackpool; T. P. Wilmshurst, Derby; Ald. Sinclair, Swansea; Ald. J. P. Smith, Barrow-in-Furness; Bailie Willock, Glasgow; *Ald. C. West, Coventry; *Ald. Bruce, Sunderland; *Councillor German, Brighton. * Elected at the meeting.

The annual report of the Council, which we give above in abstract, and the balance-sheet, were adopted.

Mr. Mark Ruddle (Dublin) urged the necessity of obtaining equal powers for the hiring-out and supply of apparatus, &c., for all municipal undertakings, and was supported by Messrs. Purse (Watford) and Cramb (Croydon), the latter pointing out that when the contractor sold apparatus, he frequently took a profit to which he was not entitled, having done nothing towards effecting the sale, which the efforts of the electricity department had brought about.

Ald. Pearson (hon. solicitor) said that if the proposed clause in the 1909 Act, as to hiring through a contractor, had been accepted, there would have been no chance of altering it for some years. As it was, he thought possibly that concerted action by several municipalities to get a small Bill through Parliament might succeed.

Other speakers suggested that the Association might promote a Bill with the assistance of the various interested authorities, and ultimately a resolution by Mr. Ruddle, instructing the Council to take the necessary steps and secure general powers for hiring out fittings, &c., was passed.

The President announced that the Council had unanimously agreed to appoint Mr. C. H. Wordingham as an hon. member.

Some discussion occurred as to the advisability of establishing a central bureau of information in order to avoid the frequent circularising of members with the same object in view. Suggestions were made by Mr. J. H. Clothier (St. Anne's) as to the desirability of instituting small sub-meetings at the annual conventions to discuss any special matter of interest, not included in the proceedings, also by Mr. W. G. Pickvance (Wrexham) that the Council should be enlarged, and the smaller towns given some representation, with a view to giving more attention to their peculiar problems. Mr. A. C. Cramb (Croydon) suggested that the Association should be represented on the Council of the London Publicity Committee, and it was agreed that the new president, Mr. J. Christie (Brighton), and Mr. Frank Ayton (Ipswich), be appointed for this purpose.

The proceedings then closed with a vote of thanks to the retiring president and the Council.

(To be continued.)

TELEPHONE DIAPHRAGMS.

[COMMUNICATED.]

The commonly accepted notions with regard to the manner in which a telephone diaphragm vibrates assume, as a rule, that the main seat of vibration lies in the central portion of the diaphragm itself.

If, however, an ordinary telephone be experimented with on this assumption, it will be found that the centre of vibration does not by any means necessarily coincide with the centre of the diaphragm.

In order to show this experimentally, it is only necessary to fix a telephone in a horizontal position, strewing sand over the surface of it in the same manner as sand is strewn over the surface of a plate for the production of Chladni's famous figures.

The ordinary telephone sounds are too weak to make any impression in the sand, on account of the exceedingly small amplitude of vibration, and it is, therefore, necessary to resort to some device that will produce vibrations of considerable amplitude.

The means by which the writer obtained his results consisted of an old electric bell, converted into a buzzer by removing the gong and hammer. The armature happened to be a very light one, and by suitably loading it and adjusting the contact screw, a very definite note could be obtained, capable of being altered in pitch between wide limits.

This apparatus was made to work from a two-cell accumulator, and advantage was taken of a small induction coil used as a transformer in order to step up the voltage sufficiently to suit the rather high resistance of the telephone winding. The result was that a loud note could be produced in the telephone, of sufficient amplitude to set the sand on the telephone disk in a state of vibration.

For purposes of observation, it was necessary to enlarge the hole in the ear-piece to such an extent that it became simply a holding-down ring for the disk.

Now, upon sounding a certain note in the buzzer, it would be natural to suppose that the vibrations reproduced in the telephone would have their greatest amplitude in the centre, and that the sand would be thrown to the circumference of the disk in the form of a heaped-up concentric ring or series of rings. Such, however, was not the case; somewhat irregular figures were carved out of the sand, and these by the forms they assumed gave little support to the idea that the central portion of the disk was that of the greatest movement.

On the contrary, the sand was often thrown away from positions close to the circumference, and several points at which the diaphragm remained bare testified to the fact that many centres of vibration existed. In fact, in spite of the disk being confined or damped all round the circumference, there was little doubt that the diaphragm divided itself up into vibrating areas.

One difficulty, however, presented itself in the apparent discrepancy between two such figures produced by the same note. It would be natural to assume that a definite note would always produce a certain definite figure corresponding to the particular form of vibration reproduced in the diaphragm, and it was only after repeated experiments in this direction that the cause was discovered. With such a sound producer as the buzzer, it is a little difficult to keep a particular note constant; subtle changes take place, due to the loosening of the contact stud, which introduce differences in pitch, slight enough, perhaps, to the ear, but instantly detected by the dancing sand particles. Thus the slight change in the last few vibrations on breaking contact may make all the difference in the final arrangement of the sand, when it comes to rest. These changes are most interesting to watch in operation. If, while a note is being sounded, the layer of sand is carefully watched, the areas of greatest vibration become apparent by reason of the greater transparency of a number of sand particles in rapid motion.

The black disk becomes partially revealed through the sand where there is considerable motion, while it remains obscured where there is comparative rest. In this manner the most beautiful gradations can be observed, and the actual manner in which the disk is responding becomes clearly defined; moreover, the slightest change in the note produces a totally different rearrangement. If the note be gradually altered, the instantaneous changes are marvellous. The patterns observed in this manner are seen to be beautifully regular; while a particular note will produce a figure like a five-petalled rose, a slight change will instantly transform it into a series of shell-like curves, and so on. The rapidity with which these shadowy figures arrive and disappear, change or persist, is exceedingly interesting to watch, apart from the appreciation of their scientific nature. But the whole experiment goes to show that the responsive vibrations of a telephone are far more complex than is generally supposed. We have been dealing here with simple notes; what, then, must be the effect of the human voice with its harmonics and overtones? The experiment, moreover, goes to show that the last word has hardly been said upon the form, size and mounting of the telephone disk.

One might go on to argue that the nearer the telephone diaphragm approaches in similarity to the human ear drum, the clearer is telephonic speech likely to become, since one is forced to the conclusion that the ear drum contracts itself into patterns similar to those produced on the telephonic disk in order to respond with a similar readiness to the sounds impressed upon it.

CORRESPONDENCE.

Letters received by us after 5 P.M. on Tuesday cannot appear until the following week. Correspondents should forward their communications at the earliest possible moment. No letter can be published unless we have the writer's name and address in our possession.

Salaries in India.

The writer has often been asked to give information as to salaries obtaining in India. As this matter may have an interest for many of your readers, I give herewith a list of salaries attached to various posts in supply undertakings I have visited. This information, I may add, was embodied in a report I prepared on the subject :—

Resident engineers	£800—1,600
Deputy engineers and chief assistants ...	600—1,040
Station superintendents...	400— 680
Mains assistants...	350
Shift engineers	250— 300
Foreman fitters	380— 400

Intending applicants for posts in the East should clearly understand that they must make up their minds to stay there, as they will find considerable difficulty in obtaining employment in England after a sojourn in the East.

Garden Reach.

June 18th, 1910.

Lightning Flashes.

Seeing the photograph you published in your issue of June 17th of the lightning in the storm on June 8th, I enclose herewith a photograph I took a year or two ago. Both flashes were simultaneous, as in the case you show, the plate only having been exposed a few seconds. It was taken at 2.15 a.m., there being practically no rain.

R. V. Hook.

Chiswick, *June 17th*, 1910.

[The view is very similar to that published last week, but the two flashes are close together and approximately parallel in their general direction, which is nearly vertical, though they differ in shape sufficiently to show that the duplication is not due to any optical reflection.—Eds. E.R.]

Commutator Troubles.

I should be glad if your readers could give an explanation of the following :—

A generator working on traction supply gives trouble, due to holes in the commutator ; some of these holes are fairly large. In nearly every case the hole begins at the mica insulation and works gradually each side into the copper segments.

Worried.

The Calculation of Illumination.

"M. F. H. W." apparently belongs to the class of pedantic and witty gentlemen, the existence of which has been increasingly noticeable in the "Correspondence" columns of the technical Press during the past few years. Unless a hapless contributor composes his articles with scrupulous care, weighing every word and phrase and filling in the whole with that diffuseness so characteristic of legal documents, he has one of the above-mentioned critics (whose first essential is a *nom-de-plume*) on his track by return of post —notwithstanding that to any reasonable person the meaning of the points upon which the critic endeavours to raise confusion is usually perfectly clear. The alleged ambiguity, &c., is seldom discernible unless deliberately sought, and I believe this to be the case in the present instance. The stilted phraseology of an ultra-precise article is doubtless admirable in its way, but is liable to attain great length in the explanation of a given subject, and to be withal very unreadable. A dissertation upon a "dry" technical subject requires every aid the author can give his readers by way of simple wording and omission of "padding."

I must apologise for this lengthy introduction, but the sentiments expressed have been frequently inspired in me by similar hypercritical letters addressed to other contributors, and I am glad to be able to publish them in my own defence.

Reply (*a*).—Curves 2 and 3, page 961, are imagined cut out of a string of similar curves stretching from lamp to lamp along, say, an illuminated street. For the purposes of calculation the illumination due to a single lamp is considered (it is obviously necessary to *calculate* the illumination at each point due to each lamp *separately*). The curve drawn is a half of one such illumination curve (the latter is symmetrical). The lamp is supposed suspended in the "y" axis of the graphs plotted, and the line along which the illumination "drops to zero" (according to "M. F. H. W.") is simply the boundary of the illumination curve, marking the most distant point at which the illumination due to the given lamp is considered, and defining the area which has to be integrated to enable the calculation of the mean illumination. Possibly my critic would be satisfied were this line dotted in both figures.

Reply (*b*).—By "minimum illumination" and "point most remote from the source," I naturally mean the minimum illumination and the most distant point *within the area considered*. The point may, under various conditions, be midway between lamps or be the point at which the illumination falls to some predetermined minimum.

I trust that the above explanation will be satisfactory. In my opinion the questions raised are particularly fine specimens of the work of the class of critics referred to. May I request the opinion of fellow victims on the subject ?

C. Toone.

Kent, *June 17th*, 1910.

It seems to me that "M. F. H. W." is inclined to hair splitting. Surely we all know that the minimum illumination is at infinite distance from the source, but then we also know that it is zero candle-feet, and does not need working out. What we do want to know, and what Mr. C. Toone explained, is the illumination at a certain definite distance. It is quite evident that the sudden drop to zero of the illumination curves occurs at the extreme limits of the areas under consideration, *i.e.*, $\sqrt{34\frac{1}{2} \text{ sq. m.}/\pi} = 10{\cdot}9$ ft. (approx.), and $\sqrt{280 \text{ sq. m.}/\pi} = 31$ ft. (approx.). Anything outside these limits does not affect the problems.

The only fault I have to find with Mr. C. Toone's article is the use of the letter "d" to represent the height of the illuminant above the plane. This causes confusion when using the calculus.

Mr. C. Toone also makes a slight mistake when he says in column 2, page 960—

$$\sec^2 d = \left(1 + \frac{p^2}{d^2}\right);$$ of course he means $\sec^2 \alpha$.

H. W. Underhill.

East Ham, *June 20th*, 1910.

Outside Lamps.

The writer has from time to time erected 400-c.p. metallic-filament lamps, on wrought-iron brackets, on or over the facia boards in front of shops, and has found it difficult to obtain a suitable lantern for the end of the bracket—that is, a lantern like the enclosed illustration, but suitable for a 400-c.p. lamp *without an outside globe*—my objections to an outside globe being that it is not required ; it is expensive, and liable to get broken ; it reduces the light ; and it looks big and awkward in the daytime. Would some of your readers kindly say how they have disposed of this difficulty ?

Lantern.

[The illustration shows a fitting supplied by Messrs. Drake & Gorham for a 100-c.p. Osram or 50-c.p. sun tantalum lamp.—Eds. E.R.]

Free Trade or Protection?

My attention has been drawn to a letter on page 987 of this week's issue emanating from Mr. Archibald Wilson.

Referring to a short speech of which I was guilty during the recent debate upon Free Trade *v.* Protection, so admirably organised and fairly conducted by the National Electrical Manufacturers' Association, Mr. Wilson says, *inter alia*, "Mr. W. G. Bond quotes with assurance a sentence from Adam Smith, the inference being that Adam Smith was a Free Trader in the sense of being in favour of free and unrestricted imports." And Mr. Wilson concludes his letters in the following style :—"To represent him [Adam Smith] as being in favour of free imports while heavy restraints are placed on the freedom of our exports to foreign countries, *is simply a perversion of fact to suit a particular argument.*" The italics are mine ; the genial controversial generosity, my opponent's.

So, this is what Mr. Wilson understands by the term argument. With him "argument" would seem to mean a game of text-slinging. Logical coherency, statistics, appeals to experience past and present, are so many devices of the Evil One. The whole thing turns apparently upon the relative success of Free Traders and Protectionists in hunting down scattered sentences from the writings of the infallible dead "to suit a particular argument."

By what right does Mr. Wilson impose such a degrading abdication of human reason upon me ? By what right does he say that I quoted "with assurance a sentence from Adam Smith, the inference being that Adam Smith was a Free Trader in the sense of being in favour of free and unrestricted imports" ? There is not a single word in my speech which justifies Mr. Wilson in attributing to me this Mumbo-Jumbo attitude. The "assurance" and the "inference" are both semi-manufactured products of Mr. Wilson's own inner consciousness.

I quoted Adam Smith, not because I regard the "Wealth of Nations" as a sacrosanct and infallible oracle, but

because the particular quotation (it happens, as a matter of strict accuracy, to consist of three sentences, and not of one, as stated by Mr. Wilson) expressed my sentiments on the present situation more pungently, more appositely, than any words which were at my own immediate command. Amongst so much bowing and kow-towing to the German fetish, I thought a little plain English would not be amiss. That is all.

As to whether Adam Smith was a whole-hogger or a little-pigger, it did not occur to me to ask myself. I never shelter myself behind the high-hedge of authority. All I remembered at the moment was the quotation in question, and the many hours of pure delight which the pages of Adam Smith's great classic had given me. It certainly never occurred to me that I should be expected in a nine minutes' speech to read out the whole of the Gospel according to Adam Smith from cover to cover for fear of being accused of "a perversion of fact to suit a particular argument." Why, even Luther at the Diet of Worms wasn't expected to do so much!

As a mere matter of polemics I do not see that Mr. Wilson's extracts help him particularly, but let that pass. Our latter-day Protectionists are pastmasters in the old wolfish game of concealing themselves in sheeps' clothing. The conclusion of every Protectionist oration is invariably, "Gentlemen, I am really and truly a Free Trader, but . . . ." And now, not even the dead are to be allowed to rest in peace, but are all to be made into the similitude of the Whole Hog. I await with impatience the canonisation of St. Cobden.

Are these tortuous tactics altogether worthy of a great cause? Would it not be more straightforward and more manly, in a word, more English, if the Protectionists were to sail the seas under their own flag? Would not the ingenious Mr. Wilson be better employed searching for arguments, instead of seeking to solve the equations—

$$(\text{Adam Smith})^2 = \text{Joseph Chamberlain}$$

and

$$\text{W. G. Bond} = \sqrt{\text{A Perverter of Fact}}\,?$$

W. G. Bond.

London, *June 20th.*

With such a generous space at his disposal, "W.B.E." should surely have given us something better than four columns of played-out platitudes in favour of Free Trade.

Who are these Tariff Reformers who demand a reduction in the total value of our imports? If "W.B.E." would take the trouble to study both sides of the case, he would not gratuitously assume that his opponents are such simpletons. The volume of the imports and the total foreign trade will increase under Tariff Reform, just as they have increased apace in the leading protected countries. All that the tariff does is to discriminate between things we can and cannot profitably produce.

Two of "W.B.E.'s" columns topple over at once when it is pointed out to him that we don't intend and don't expect to reduce imports, but only to select them and increase the total.

His other two columns begin to be very shaky when he admits that "this fact that imports are paid for by exports is the crux of the matter." The real crux is—what kind of exports? In his careless but honest admission that England is "holding a large part of the world in pawn," it does not seem to occur to "W. B. E." that some of our imports may represent the world's redemption of pledges.

If our imports are partly paid for by such exports as a transfer of Consols or American railway bonds, are we justified in keeping up our enthusiasm by Board of Trade returns?

T. C. Elder.

Loughborough, *June 18th*, 1910.

Flame Arc Lamps—Carbon Deposit.

Your correspondent "T. G. L." refers, in his letter written in reply to "Inquirer" which appears in your current issue, to the etching or frosting of the globes of flame lamps by the products of combustion of the special carbons used therein, and rightly points out the great and almost immediate decrease in lighting efficiency resulting from such action, which even at the best can only be imperfectly overcome by the frequent renewal of the affected glassware; and he finally suggests the desirability of a "practical remedy to this difficulty" being quickly forthcoming.

We should like to point out to this gentleman and others interested that the "Excello" flame arc lamp has for some considerable time been fitted with our patent deposit-free cover, whereby the products of combustion are prevented from reaching the globes, and are condensed in a special and readily accessible chamber provided for the purpose, from which the deposit can easily and quickly be removed with a small brush or a damp cloth.

The translucence of the globes remains by this means unimpaired; the full candle-power of the lamp is thus maintained throughout any length of run, and a corresponding gain in light emission, amounting in some instances to as much as from 25 to 30 per cent., is secured.

We should be happy to forward, to any interested, further particulars upon application.

The Union Electric Co., Ltd.,
Justus Eck.

London, S.E., *June 20th*, 1910.

Accountancy and Regulations.—If "An Old Reader" will send us his name and address, we shall be pleased to assist him.—Eds. E. R.

NEW ELECTRICAL DEVICES, FITTINGS, AND PLANT.

Controller Fingers.

The accompanying illustrations represent two patterns of White's patent reversible and renewable contact controller fingers which are being supplied by the Traction Supplies Co., Ltd., of Gill Bridge Avenue, Sunderland. We understand that these fingers are

Fig. 1.—B.T.-H. Pattern.

being adopted in from forty to fifty tramway stations, including some of the largest users, and are working satisfactorily, saving much bother with regard to renewals. The company has issued a

Fig. 2.—Dick, Kerr Pattern.

list showing B.T.-H., Dick, Kerr, Siemens-Schuckert, and Westinghouse patterns, and one for Stellite controllers as supplied to Dorman Longs. We show in figs. 1 and 2 the B.T.-H. and Dick-Kerr patterns respectively.

The Deposit-free Cover.

As our "Correspondence" columns show, the fact that the use of impregnated carbons produces fumes which cause a deposit on the globes of arc lamps gives rise to much trouble and expense. This deposit must be removed whenever the lamp is re-carboned, and, therefore, involves extra trimming costs and a considerable loss of light. It has been found that the loss of light with the ordinary type of flame arc lamp is not less than 30 per cent. during a 17-hour run, starting with new globes; in practice, however, the deposit is adherent to the globe and cannot be easily removed, and, in addi-

tion, the globes themselves become etched with the fumes which are given off when the lamps are in use. With old globes, therefore, the loss of light often reaches 40 per cent., due to the combined effect of the etching and the adherent deposit.

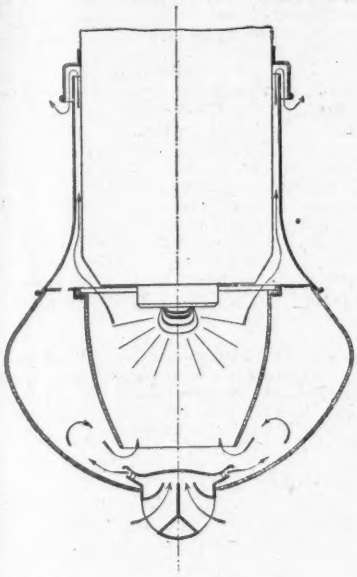


Fig. 3.—Globe-Ventilating Arrangement in Excello Arc Lamp (Deposit-Free).

The design of the deposit-free cover of the Excello arc lamp, supplied by the Union Electric Co., Ltd., of Park Street, Southwark, S.E., is illustrated in fig. 3. In this an inner and an outer globe are provided, these being connected together at the top by a diaphragm, thus forming an enclosed air space between the two globes. The air enters through the ash tray, is slightly heated in the space between the two globes, and, rising through the inner globe to the arc, is charged with the fumes and deposit from the same and then deflected sideways towards the inner surface of the inner globe. If these surfaces were as cool as the outer globe, the same course of circulation would result as previously mentioned, and deposit would be formed on the inner globe; but, owing to the proximity of the inner globe to the arc, the temperature is much higher, and this temperature is

Deposit-free cover. Old arrangement.

Fig. 4.—Two Excello Lamps with Clear Glass Globes, after 100 hours' use.

easily maintained, due to the stagnant air between the inner and the outer globe forming an excellent heat insulator. The effect, therefore, is that the course of the air through the lamp is practically continuously upwards, and both globes remain free from deposit or etching action. In fig. 4 two Excello arc lamp globes are illustrated; in both, the globes were originally of clear glass, and in both, flame carbons have been burnt for 100 hours without cleaning the globes. The remarkably clean globe (on the left) produced by the deposit-free cover is very noticeable.

Falk, Stadelmann's Fittings.

Messrs. Falk, Stadelmann & Co., Ltd., who for many years past have had large and specially fitted showrooms set apart for the trade to inspect their various electric light fittings and other electrical lines, have lately had these showrooms redecorated, and naturally their manufactures appear to better advantage under such conditions. We mentioned briefly, a week or two ago, the firm's recently issued catalogue, and we now show in the accompanying illustrations two or three specimen fittings which may be regarded as typical of the whole, and generally indicating the prevailing tendency in taste. The smallest illustration of the three shows a plain cast brass turned table lamp which, while very low in price, is effective in design. More costly and more handsome standard fittings, treated in the Adams style, are on view at the showrooms, 83 to 87, Farringdon Road, E.C. The fitting shown on the left

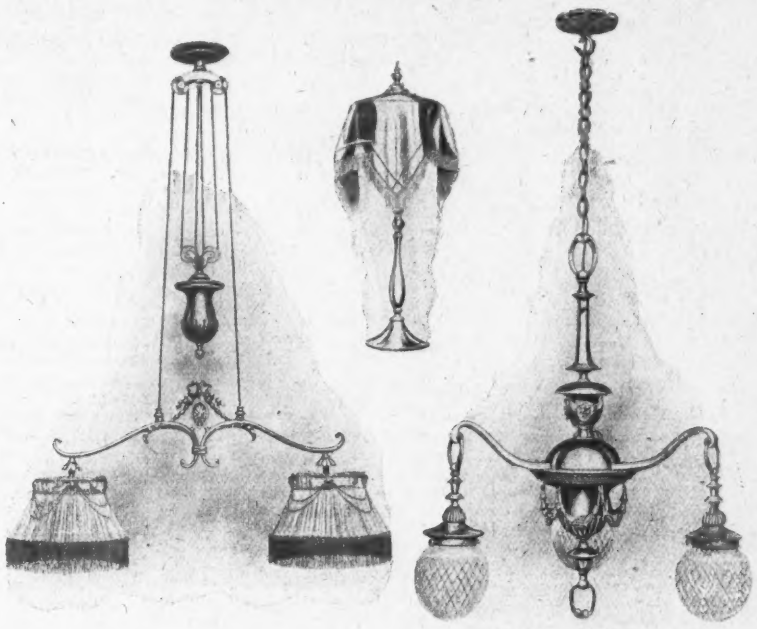


Fig. 5.—Specimen Fittings by Messrs. Falk, Stadelmann & Co.

in our illustration is a two-light dressing-table pendant of correct Adams style, that appearing on the right being a massive electrolier of the Georgian style. Torchlight electrolier fittings for saloons or foyers are also in vogue at present.

"Diamond H" Switches.

The Hart Manufacturing Co. (European manager, Mr. Crichton) is now settled in its new premises, 77, Rochester Row, Westminster, S.W., where it has accommodation for stocking larger quantities of its electric switch specialities, and therefore hopes to be able to give prompter deliveries. From this office the company conducts a very large business in its particular lines both in this country and on the Continent, and with Colonial and other far distant countries; indeed, all parts of the world excepting America. During the last five or six years very many thousands of the Hart switches have been put into large buildings, including the Ritz Hotel, Bank of England, and Gaiety Hotel, in London; Midland Hotel, Manchester; Liverpool Cotton Exchange; Hotel Maurice and Hotel Regina, in Paris; in St. Petersburg, Australia, and so forth. Park Lane mansions and many a country house include the Hart switches among the details of their electrical installations. Some thousands of a special type of double-pole quick-break switch are used on the tramcars of the London County Council, and combination types are supplied for motor-car ignition and lighting

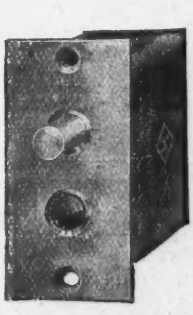


Fig. 6.—Front of Low-Voltage Push-Button Switch.

Fig. 7.—Interior of Push-Button Switch.

service. The company gives fully illustrated particulars of all its different designs of "Diamond H" switches—push-button, rotary flush and rotary surface types—in a catalogue which can be obtained on application to the firm at the above address.

Our last extended reference to these manufactures appeared in the Electrical Review of May 27th, 1904, since which date several interesting developments have been made, to which we may briefly draw attention. Fig. 6 shows the front view of the push-button switch, as made for low-voltage circuits in connection with automobile and other

batteries, and fig. 7 shows the interior of a switch of similar pattern, which may be taken as typical of the push-button switch mechanism; it will be observed that the base, which is of porcelain and entirely encloses the mechanism, is much shallower than the original design, an obvious advantage in installing the switch. A

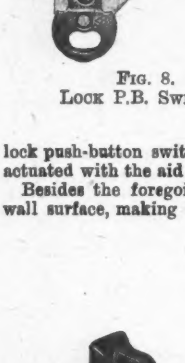


FIG. 8.
LOCK P.B. SWITCH.

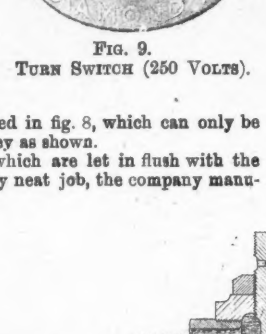


FIG. 9.
TURN SWITCH (250 VOLTS).

lock push-button switch is illustrated in fig. 8, which can only be actuated with the aid of a special key as shown.

Besides the foregoing patterns, which are let in flush with the wall surface, making an exceedingly neat job, the company manufacture a variety of surface turn switches, two of which we illustrate in figs. 9 and 10. It will be noticed that special types of terminal are employed on these switches; that shown in fig. 9 in particular is extremely easy to wire, the conductor being simply inserted from the back, bent forward, and clamped with the screw. All the switches are strongly made, the mechanism is insulated from the current-carrying parts with sheet mica, and ample section and contact surface are provided.

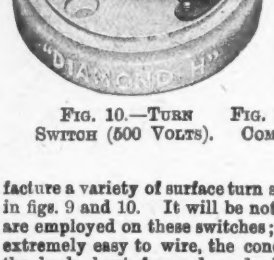


FIG. 10.—TURN SWITCH (500 VOLTS).

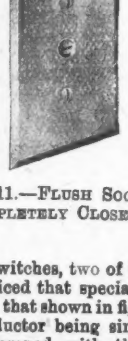


FIG. 11.—FLUSH SOCKET COMPLETELY CLOSED.

From the many other devices made by the company we have selected for illustration the plug and flush socket, shown in figs. 11 and 12, on account of its ingenious construction. When not in use, the holes in the plate are completely closed; the plug is

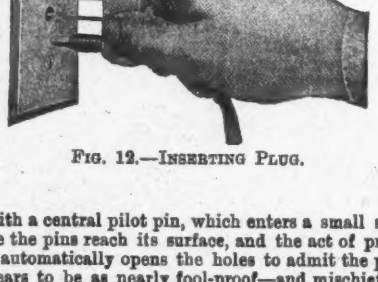


FIG. 12.—INSERTING PLUG.

provided with a central pilot pin, which enters a small slot in the plate before the pins reach its surface, and the act of pressing the plug home automatically opens the holes to admit the pins. This socket appears to be as nearly fool-proof—and mischief-proof—as any device could be; and, like the switches, it is now made very shallow (1½ in. deep).

An ingenious device, which can be seen at the company's offices, consists of a combination switch and door-locking device, by means of which, on leaving one's hotel bedroom, by one turn of the key one locks the door and turns out the light simultaneously. In some American hotels, we are given to understand, very considerable economies in lighting consumption have been effected by means of this device. In hotels in this country and abroad, where it happens that spring locks obviating the turning of the key are not in vogue, similar economies should be possible, for it is a human weakness, especially in hotels, for one forgetfully to leave lamps burning when they are not needed.

Smith's Patent Exhaust-Steam Feed-Water Heater.

The object of this device is to provide a simple and inexpensive means by which the exhaust steam from auxiliary or other plant can be utilised to heat the feed-water, and at the same time the pure water can be recovered, which might otherwise be wasted. To use this form of heater it is only necessary to place it at the top of the hotwell tank or other reservoir generally used for the storage of feed-water, the top part of which should be closed to prevent radiation. The chief feature of the heater is that, although the exhaust steam is entirely surrounded by water, it is not under water-level at the outlet, so that there is no possibility of creating a back-pressure on the plant from which the exhaust is derived. This is accomplished by changing the form of the water, as it passes through the heater, from a solid bore at the inlet to a hollow "umbrella-shaped" film, having its base at the water-level in the tank. The exhaust steam, on entering the inner casing, is met by a few jets of water, which help to reduce the temperature of the steam, and then passes out of the heater into the space which is made by the water "umbrella." In trying to break through this film, which can be made of any desired thickness, it is completely condensed.

The above description applies to both types of heater here illustrated. The automatic type provides a means of regulating the water in the tank, when necessary, without interfering with the free discharge of exhaust steam. By removing the cap A, the spring B can readily be adjusted. It is obvious that in most cases, when the feed-water has been checked, the amount of exhaust steam is less than when the former was "full on," so that the whole arrangement, with an automatic type of heater, would be automatic.

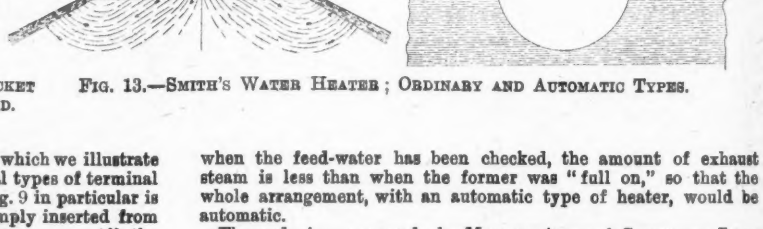


FIG. 13.—SMITH'S WATER HEATER; ORDINARY AND AUTOMATIC TYPES.

These devices are made by MESSRS. ALLEN & SIMMONDS, LTD., 65, Fenchurch Street, E.C.

LEGAL.

ATTORNEY-GENERAL *v.* LEICESTER CORPORATION.

(*Concluded from page* 991.)

ON Tuesday, June 14th, a number of witnesses were called to prove the purchase of lamps and other fittings at the Corporation showrooms, which they said were open to the street and had ordinary shop windows in which electrical appliances were displayed. No notice, they said, was to be seen specifying to whom the goods should be sold.

MR. WALKER, an electrical contractor, said the contractor's business was a distinct business, and was well known in the trade.

MR. LEONARD TATE, an electrical engineer and electrical contractor, gave evidence as to how mains and wires were generally laid. He was, he said, familiar with the requirements and regulations of the electric supply companies. As an electrical contractor putting in an installation, his work would commence at the consumers' terminals. It was recognised in the trade that the putting-in of an installation was a separate business from that of a supply. The installation was a business in itself. Witness was asked as to the regulations of the City of London Electric Lighting Co., but Mr. Danckwerts objected, and the question was not pressed.

Cross-examined, WITNESS said that he was secretary to the Electrical Contractors' Association, but that association did not guarantee its members against the costs of actions. There were such arrangements between members themselves for guaranteeing against loss, but he did not know any particulars of any guarantee with reference to the costs of this particular action. Supply companies were, by Act of Parliament, bound to keep a constant pressure within certain limits.

Mr. W. R. Rawlings was then called. He said that he was a member of the Institution of Electrical Engineers, and was on the Wiring Committee of the Institution, and he had been in practice as an electrical engineer for 20 years. On one side of the main fuses it was considered the contractors had no control, and on the other side of the main fuses the consumers' installation commenced. One side of the terminals was the consumer's, and the other side the supply company's. Terminal, however, was a mere name for the junction, and as a rule there were four terminals. The terminals were usually reckoned to be at the main cut-out, and then the supply could be cut off by the withdrawal of the fuses. He was familiar with the regulations of the principal supply companies, and had done a good deal of installation work himself. Installation work was regarded as perfectly distinct from the business of supply.

Mr. McCardie, summing up the plaintiffs' case, submitted that so far as the facts were concerned, the plaintiffs had established the case raised by their pleadings. With regard to the Acts, he submitted it was clear upon the authorities that a Corporation could not maintain a business of the nature complained of without special powers, and neither their special Act or the provisional order contained any such powers.

In opening the case for the defence, Mr. Danckwerts submitted that from 1898 down to the present time the course adopted by the Corporation had been the same, and was entirely consistent with the resolution they passed on May 9th that year, and the letter that they then wrote. That letter clearly expressed the intention of the Corporation only to do wiring and only to sell apparatus and fittings to such premises as were taking, and were going to take, their supply of electricity from the Corporation. That was what they had done according to the evidence, and that was what they claimed they had a right to do. For 12 years the Corporation had adopted that attitude, and when he drew attention to the Acts of Parliament and the authorities, the Court would find they authorised the taking of that attitude. He relied upon the doctrine that had been stated in various ways in the numerous authorities, that a company formed for the purpose of supply had power to do everything indicated and necessary to such supply. The Acts had chosen to use compendious language, but he hoped to show that the compendious language did cover a supply right up to the point at which the gas or electricity, as the case might be, was consumed. It must continue right up to the point of consumption, because until it got there the supply was not complete. If the supply was not complete until you got to the point of consumption, then everything that was used for getting to the place of consumption was part of the supply. Whether you called it an electric line, apparatus or fittings did not matter. If one looked at Sec. 10 of the Act of 1882, you found power to do all such things as were necessary for the supply, and to enter into contracts for the purpose. Why, therefore, should the Corporation not be entitled to enter into contracts to supply fittings which were certainly incidental and necessary to the supply, because they were necessary to enable the consumer to utilise the supply? Until you got the light or heat, or whatever it was that was required, the supply was not complete. He contended, and it had been proved definitely, that everything the Corporation had supplied, had been supplied in connection with their supply of electrical energy. He did not contend that they had any right to supply telephone wires or anything of that sort, nor was he going to contend that they had any right to supply electricity outside the borough in a general way. He should contend, however, that the Court would not interfere by way of injunction in the exercise of its discretion, that they had not got the proper parties before the Court to enable it to grant an injunction, and that the Act of 1909 contained provisions that enabled a Corporation to supply outside their area, with the sanction of the Board of Trade. The Board of Trade had been approached by the Leicester Corporation, and while they declined to make a general order authorising a supply outside the area, they said they would consider any specific instance.

Mr. Cassel pointed out that he was not asking for any injunction in respect of supply, but only in respect of fittings.

Mr. Danckwerts said he need not pursue the matter further. He submitted that all the evidence given as to the supply of fittings were instances where they were supplied to people who were taking a supply within the borough area, and it was thought they were required in connection with that supply.

Mr. Swinburne, called for the defence, explained the methods of measuring the electric current, and the method by which it passed through the meter.

Cross-examined, he said any leakage up to the meter would be the concern of the supply company, and any leakage beyond, the concern of the consumer. The supply company's remedy in respect of consumer's leakage would be to cut off the supply.

On Wednesday, June 15th, Mr. J. J. P. Barker, manager of the Corporation's Electric Fittings Department, was called for the defence. He said that he had been with the Corporation for 36 years, and had held his present position for seven or eight years. The Corporation showrooms were separated from the stores by a yard, and if anyone asked for an electric lamp, or anything of that sort, it would have to be fetched from the stores. Wiring had been done by the Corporation for people who did not take their supply from them, but it was a long time ago, and it was done very seldom. The Corporation had done bell wiring, but that was usually when they were called in to repair wires, and while doing the other wiring they did the bell wires as well. They did not make a speciality of bell-wiring, and they were now doing no bell-wiring at all. Now, if they were asked about bell-wiring, they referred the applicant to a contractor. He had never put in any telephones or telephone wires, but the work in connection with the Corporation's telephones and wires in their own buildings was done by the Corporation's own men. In his opinion it was important that premises should be properly wired, and that the fittings should be perfect. He had, however, instances of the wiring being imperfect on the premises of persons who took the Corporation's current. The Corporation always tested the wiring before it was used, whether the wiring was done by themselves or not, and they had a tester for the purpose. Failures often occurred on Saturday afternoons and holidays, when, he assumed, most business premises would be closed, and when, therefore, it would be essential to apply to the Corporation.

In cross-examination, he said that so far as he knew, it was not the custom to ask their customers to make any declaration. Customers just asked for what they wanted, and did not say what they wanted it for. The showroom had ordinary shop windows in which were displayed such things as shaving water heaters, cooking utensils and magic mirrors. The Corporation put in fittings for one firm to the value of over £500, who were not consumers of their supply.

Why?—Witness did not know.

Counsel suggested that it was probably because the Corporation hoped that some day they would take their supply.—Witness thought that might be so.

Counsel pointed out that that was 15 years ago, and that particular firm had not taken a supply from the Corporation yet, and had still their own installation.

Further cross-examined as to specific instances when the Corporation had done work for persons not taking their supply, Witness said they were mostly additions to plant already in existence. They never went on to premises of people who were not taking a supply from the Corporation's mains, unless specially authorised to do so by Mr. Colston, their late manager. When the usual business premises were closed, it was necessary to call upon the Corporation in the event of failure, and he did not know that there were electrical contractors always ready to do the necessary work. It was quite possible to have a supply otherwise than by meter.

That concluded the case for the defence, and in replying on the whole case, Mr. Cassel said he understood that while the defendants claimed the right under the old Acts to hire out apparatus, they did not go so far as to contend they were authorised to sell apparatus to anyone. He submitted that the Electric Lighting Act of 1909, which had only recently come into force, was absolutely destructive to that argument. It extended the rights under the old Acts, and if the arguments for the defence were well founded, no extension would have been necessary. It was argued that under the old Gas Acts supply terminated at the burners or point of consumption, but the Gas Acts and Electric Lighting Acts in that respect were quite distinct. The Gas Acts provided for a supply of fittings, but the Electric Lighting Acts did not refer to electric fittings at all. The word supply was used both in the Electric Lighting Acts and the Gas Acts. In the Gas Acts no doubt it meant supply up to the point of combustion, but in the Electric Lighting Acts it was expressly defined as being a supply up to the consumer's premises. In the Gas Acts there was power to charge for various things, but in the Electric Lighting Acts there was only power to charge for the supply and for meters. Even assuming that the Corporation were entitled to do wiring on premises which they supplied with current, Counsel submitted they were not entitled to extend their undertaking to the sale of the numerous articles they were supplying.

His Lordship thought that they would be, as being things incidental to the supply.

Mr. Cassel submitted that such a sale was merely keeping a shop.

At the conclusion of the arguments, his Lordship said he would consider his decision.

Judgment.

On Monday, June 20th, his Lordship delivered his reserved judgment. He said: The Attorney-General, on the relation of a ratepayer of the Borough of Leicester, sues the defendants, the Corporation, to restrain certain acts alleged to be *ultra vires*. The defendants are the undertakers under the Electric Lighting Act, 1882, and a provisional order granted thereunder, for the supply of electric energy within the borough. They claim the right to supply the wires and fittings used for the taking and consuming of such energy, including bells and motors worked by such energy, to persons taking energy from them under the order. They based this claim at the trial solely on the statutory powers vested in them under the Electric Lighting Acts and Order. Their title to do these things, which admittedly have been done, is the main and important issue between the parties. The plaintiff alleges that in addition to the acts which they claim a right to do, the defendants have, in fact, supplied fittings to persons in respect of buildings within the borough who do not take energy from them, and in connection with buildings and to persons resident outside the borough. In the view of the case, which I take this is not important, and I can dispose of the matter at once by saying that in my opinion the plaintiffs proved their allegations. To come to the more important question, the extent of the defendants' statutory powers, I think it unnecessary to consider the nature of the fittings and apparatus supplied by the defendants to the consumers. By Sec. 18 of the Electric Lighting Act, 1882, the consumer has the right to use the electricity supplied, for all purposes without interference by the undertakers. If, therefore, the defendants are entitled to supply lamps to the consumers for lighting purposes, it seems to me they must be equally entitled to supply apparatus for the use of the electricity in any other way. The defendants contend that their acts are justified as being part of the supply within the meaning of the Act and Order, or as being reasonably necessary or incidental to such supply. Sec. 10 of the Act of 1882 authorises

undertakers to generally do all such acts and things for the purpose of supplying electricity as may be necessary and incidental to such supply. The Act having expressly given powers to do all such acts and things as may be necessary and incidental to the particular power to supply, it seems to me difficult to imply any further powers to do what is reasonably incidental to the power to supply. It may well be, however, that the words should be read as necessary or incidental to such supply, in which case the general powers expressly given would be identical with the general powers which would have been inferred had the Act been silent with regard to them. This consideration seems to me, however, unimportant, for if the right to supply energy does not itself include the right to wire and fit the premises supplied, I think the right cannot be claimed as incidental. If there be a distinction between supply and use, so far as the undertakers are concerned, the acts done are clearly referable to the use, and not to the supply. I come, therefore, to consider whether installation and the supply of lamps and fittings is part of the supply within the meaning of that word in the Act. I pause here to say that, in my opinion, the Court is in no way concerned with the consideration of the desirability or undesirability of the powers claimed being vested in the defendants; that is for the Legislature alone. Further, I think it immaterial whether the defendants have made a profit or loss by the business. If it is *ultra vires* it is not the less so because it is commercially successful. Nor could the most brilliant success enlarge the powers of the defendants. An analogy between the Acts relating to gas and electricity has been insisted upon as indicating the intention of the Legislature to bestow upon the undertakers under the latter, powers with regard to the supply of electrical fittings and apparatus similar to those bestowed under the former with regard to pipes, burners, meters and lamps. In fact, however, Secs. 13 and 14, of 10 and 11 Vic., Chapter 15, give express power in the case of gas, and there is no corresponding section in the Act of 1882, while Sec. 18 of the Act of 1882 expressly negatived the right of the undertakers to prescribe any lamp or interfere with the use of electricity in contradistinction to the right to prescribe the burner given to the undertakers by Sec. 18 of the Gas Act. I think, therefore, that the analogy fails. I also think that there is nothing in the sections of the Act of 1847 inconsistent with the construction of "supply" in the Act of 1882 contended for by the plaintiff, namely, that it means the supply of energy to the consumer at his terminal. Sec. 18, already referred to, plainly discriminates between supply of electricity and its use, and gives the undertakers no authority over the latter. When we turn to the provisional order the interpretation, in my opinion, becomes still plainer. There "consumer's terminals" is stated to mean "the ends of the electric lines situate upon any consumer's premises, and belonging to him, at which the supply of energy is delivered from the service line." The undertakers have power to charge for supply of energy and for meter and fittings, but for furnishing and laying lines they have no power to charge, except in special cases, by Clause 21 of the Provisional Order. However, they are bound to give a supply of energy on demand, and if the wiring of the house and provision of fittings is part of the supply, they would be compellable to do it without remuneration, and I think there is force in the plaintiff's argument that this cannot have been intended by the Legislature. In my opinion, "supply" within the meaning of the Act and order is completed at the consumer's terminals. The installation of electricity and provisional fittings is, in my opinion, a separate business incidental to the use, but not to the supply, of energy. I think that the defendants have misinterpreted their powers, and have been carrying on a business in excess of them. In my opinion the Act of 1909 does not throw light upon the meaning of "supply" in the Act of 1882, Sec. 16 not having, in my opinion, reference to any power given by the Act of 1882. I think the plaintiff is entitled to the declaration asked for in Paragraph 1 of the claim, and to an injunction in the same terms. The defendants must pay the costs of the action.

Mr. Danckwerts said the defendants would like to consider whether they will carry the matter further.

Mr. Justice Neville: Yes. What do you suggest with regard to that?

Mr. Danckwerts: I would suggest the suspension of the injunction.

Mr. Justice Neville: Certainly, if notice of appeal is given within reasonable time.

Mr. Cassel: Suggested notice of appeal should be given within 14 days.

Mr. Justice Neville: Notice of appeal given within 14 days, and duly prosecuted.

Mr. Cassel: With regard to the costs, my Lord, I apprehend there will be the usual undertaking.

Mr. Justice Neville: I have nothing to do with that. If the solicitors do not give the undertaking you will have to go on.

Mr. Cassel: Then there will be a stay if the appeal be set down within fourteen days?

Mr. Danckwerts: Say three weeks.

Mr. Justice Neville: Very well.

Mr. Cassel: Then, my Lord, with regard to the declaration.

Mr. Justice Neville: That is Paragraph 1.

Mr. Cassel: Paragraph 1 refers back to Paragraph 5 of the pleadings.

Mr. Justice Neville: Yes, that is right.

Mr. Cassel: That deals separately with the three cases.

Mr. Justice Neville: There should be no difficulty in putting it into the formal order.

Mr. Cassel: No.

Mr. Danckwerts: I take it the injunction will be general.

Mr. Justice Neville: I think the injunction ought to go in the form asked under the Act, because there were these minor matters, but I do not think it matters much. I think the injunction should be in that form.

Mr. Cassel: If your Lordship pleases. It will be judgment for plaintiff, with costs?

Mr. Justice Neville: Yes.

The "Z" Electric Lamp Manufacturing Co., Ltd., *v.* Marples, Leach & Co., Ltd.

This case was mentioned in the Court of Appeal, before the Master of the Rolls and Lords Justices Farwell and Kennedy, on Saturday, upon the application by the plaintiffs for security for the costs of the appeal which the defendants had entered from the judgment of Mr. Justice Parker in the Chancery Division. The action was brought by the plaintiffs for an injunction to restrain defendants from infringing their patent for improvements in the manufacture of metallic-filament electric lamps with the object of preventing blackening of the lamps. Mr. Justice Parker held that the plaintiffs' patent was valid, and that the defendant company had infringed it, and from that decision the defendants are appealing.

Mr. Walter, K.C., on behalf of the plaintiffs, stated that the defendant company was in liquidation, and it had been agreed that security should be found for the costs of the appeal in the sum of £200 within 10 days.

Mr. Thomas T. Terrell, K.C., on behalf of the defendants, pointed out that the defendants had paid the taxed costs in the Court below.

Their Lordships assented to the arrangement.

Motion against the City of Birmingham Tramways.

In the Chancery Division, on Friday, June 17th, Mr. Gore Browne, K.C., applied to Mr. Justice Swinfen Eady that the motion of Wm. Neale and Another *v.* The City of Birmingham Tramways should be adjourned for a fortnight in order that consideration might be given to evidence just delivered.

His Lordship granted the application.

The motion was to restrain defendants from acting on a resolution which had been passed.

Whitehurst *v.* General Electric Co., Ltd.

At the Salford County Court on Thursday, last week, a machinist named William Whitehurst applied for compensation against defendants, of Peel Works, Manchester. He was engaged working a circular saw, and had his right hand so injured that the first finger was amputated, and the second left permanently stiff. The defence was that the injuries did not incapacitate him, and the manager of the department in which the applicant was employed, added: "The loss of a finger in our trade is a minor detail. We don't worry about it." The foreman stated that 45 per cent. of the machinists in Manchester to-day have lost a member of some sort, and not above 5 per cent. of them are out of work.

Deputy-Judge Strachan, K.C., however, awarded the applicant 6s. per week.

Motor-Omnibuses as Tramway Feeders.

In the Court of Appeal on Tuesday, the Master of the Rolls, Lord Justice Farwell, and Lord Justice Kennedy concluded a case which had occupied the Court for four days, in which the Fiat Motor, Ltd., appealed from the judgment of Mr. Justice Lawrence on an arbitrator's award giving the Bristol Tramways and Carriage Co., £2,300 in respect of breach of contract and delay in the delivery of six motor-omnibuses to be used as feeders to the Bristol tramways.

Mr. Montagu Lush, K.C., with Mr. Wakeley were for the plaintiffs, and Mr. Simon, K.C., with Mr. Leck were for the defendants (the appellants).

Judgment was reserved.

Andrews *v.* London County Council.

Mr. Justice Channell and a common jury on Wednesday, June 15th, heard an action in which a florist and seedsman named Andrews, residing at the Canal Bridge, Cambridge Heath, claimed for damages sustained through alleged negligence and trespass on the part of the L.C.C. in carrying out the reconstruction of the canal bridge in order to complete the electrification of the tramway system.

Mr. Mallinson was for the plaintiff, and Mr. Simon, K.C., with Mr. Walsh, appeared for defendant Council.

According to Counsel's opening statement, work was begun on the bridge in January of last year and continued for five or six months, in consequence of which the business of the plaintiff suffered severely. Rubbish was heaped up outside the shop and at times the only means of access was over a plank. The result was that customers were driven away, and owing to that and the damage to stock, serious financial loss had occurred. A correspondence passed between the plaintiff and the Highways Committee of the Council with the result that the latter repudiated liability.

The Plaintiff, in the course of his evidence, said, that the

"ELECTRICAL REVIEW" L

	Place.	Supply Authority.	Year of opening.	Engineer.	Pressure of supply, volts.	Frequency and phase.	Total capacity of plant in KW.	Max. load recorded in KW.	Storage battery, max. discharge.	Total capital expended.	Private lighting.	Public lighting.	No. and B.H.P. of private motors.	No. and of tract motor
1	ABERDEEN	Aberdeen Corporation	1894	J. Alex. Bell	220,230 & 440 D.C., tr. 500*	Direct & 50~ 1-ph. & 3-ph.	4,610	3,218	420 KW.	£363,849	5,138 KW.	312 arc, 117 mtl.	707=4,012 H.P.	160=4,00
2	ABERTILLERY	Abertillery Urban District Council	1910	Dan Lloyd	250 & 500	Direct	132	44	..	£10,000	35 KW.	250 mtl.	4=18 H.P.	..
3	ABERYSTWYTH	Chiswick Electricity Supply Corporation, Ltd.	1895	E. P. Perkins	220 & 440	Direct	430	220	74 KW.	..	480.5 KW.	29 arc, 8 mtl.	25 H.P.	..
4	ACCRINGTON	Accrington Corporation	1900	Harold Gray	230 & 460 tr. 550	Direct	1,888	1,228	160 KW.	£71,641	980 KW.	18 arc, 60 mtl.	241=999 KW	46=1,74
5	ACTON	Acton Urban District Council*	1905	J. Martin Blair	230 & 460	Direct	920* (mtr.-gen.)	332	1,000 A.H.	£66,647	919 KW.	64 arc, 128 cbn.	67=229 H.P.	..
6	ALDERLEY EDGE AND WILMSLOW	Alderley & Wilmslow Electric Supply Ltd.	1899	Edgar Hesketh	210 & 420	Direct	242	129.3	33.6 KW.	£46,804	579 KW.	1 cbn., 243 N.	16=51½ H.P.	..
7	ALDERSHOT TOWN	Aldershot Urban District Council	1902	F. Garside	210 & 420	Direct	440	199	150 A.	£27,975	428 KW.	19 arc, 44 mtl., 20 N.	31=77 H.P.	..
8	ALLOA	Alloa Corporation	1902	J. W. Napier	220 & 440	Direct	..	98·5	270 A.	£9,500	265 KW.	20 arc	16=24 H.P.	..
9	ALNWICK	Northern Counties Electricity Supply Co., Ltd.	1902	J.W. Summerside (Res.)*	230 & 460	Direct	150	130	..	..	288 KW.	..	105 KW. pr. & htg.	..
10	ALTRINCHAM & DIST.	Altrincham Electric Supply Ltd.	1895	Geo. H. Fawcus	100	80~, 1-ph.	660	427	..	£67,214	1,780 KW.	..	20=84 H.P.	..
11	ARBROATH	Arbroath Electric Light and Power Co., Ltd.	1908	J. C. Christie	250 & 500	Direct	450	319	208 KW.	£31,653	119 KW.	20 fl. arc, 40 mtl.	47=606 H.P.	..
12	ASCOT & DISTRICT	Ascot District Gas and Electricity Company	1907	A. E. Brooks	220 & 440	Direct	100	53.5	57 KW.	£24,231	233 KW.	..	5=11.9 KW.	..
13	ASHTON-U-LYNE	Ashton Corporation	1899	N. Appelbee	240 & 480 tr. 500	Direct	1,760	1,391	..	£85,525	1,083 KW.	98 arc, 123 cbn., 164 mtl.	164=851 H.P.	130=3,000
14	ASTON MANOR AND ERDINGTON	Aston Manor Corporation	1903	Robert Foster	230 & 400 tr. 500-550	50~, 3-ph.	4,765	2,400 lg., 350 tr.	..	£170,335	1,082.3 KW.	19 arc, 34 cbn., 6 mtl.	4713.5 H.P.	35 (averag 2,000 H
15	ATHERTON	Atherton Urban Dist. Council*	1903	Chas. T. Astbury	240 A.C., 500 D.C.	50~, 2-ph. & direct	300*	80	..	£10,000	101 KW.	12 arc	20=178 H.P.	..
16	AYR	Ayr Corporation	1896	Roland Marshall	100 & 200A.C. 250&500D.C.*	60~, 1-ph., & direct	1,325	854	100 KW.	£100,616	1,850 KW.	11arc,188cbn., 20 mtl., 6 N.	1100=331 H.P.	32=800
17	BANBURY	Banbury & District Electric Supply Co., Ltd.	1903	Arthur J. Wray	230 & 460	Direct	662	250	100 KW.	..	331 KW.	..	40=250 H.P.	..
18	BANGOR (WALES)	Bangor Corporation	1900	Price F. White	200 & 400	Direct	440	220	84 KW.	£30,116	424 KW.	..	23=113 H.P.	..
19	BARKING	Barking Urban District Council	1899	H. L. Howard	230 & 460	Direct	1,010	478	..	£60,000	461 KW.	19 arc, 494 inc., 54 Nernst	64=493 H.P.	24=600
20	BARNES, MORTLAKE & EAST SHEEN	Barnes Urban District Council	1901	C. S. Davidson	210 & 420	Direct	970	505	300 KW.	£65,201	1,440 KW.	231 mtl., 236 N.	55=366 KW.	..
21	BARNSLEY	Barnsley Corporation	1900	E. A. Barker	230 & 460, tr. 500	Direct	1,325	822	150 KW.	£77,441	1,685 KW.	110 arc, 141 inc.	120	..
22	BARNSTAPLE	Barnstaple Corporation	1903	J. W. Hadfield	230 & 460	Direct	375	195	41.4 KW.	£31,600	525 KW.	30 arc, 78 cbn. 93 mtl.	26=70 H.P.	..
23	BARROW-IN-FURNESS	Barrow-in-Furness Corporation	1899	H. R. Burnett	220 & 440 tr. 500	Direct	1,525	925	300 KW.	£114,570	1,661 KW.	78 arc, 106 cbn., 43 mtl.	138=782 KW.	32=752
24	BATH	Bath Corporation	1890	Francis Teague	100 A.C., 220 D.C.	100~, 1-ph., & direct	1,900	1,078	350 KW.	£164,418	1,842 KW.	194 arc, 3 cbn., 6 mtl.	141=476 H.P.	..
25	BATLEY	Batley Corporation	1908	S. D. Jones	220 & 440	Direct	850	580	90 KW.	£43,667	523 KW.	25 arc, 50 inc.	72=239.4 KW.	32=1,173
26	BECKENHAM	Beckenham Urban District Council	1900	J. E. Tapper	200 & 400 tr. 500 D.C.	50~, 1-ph.	1,300	706	500 KW.	£129,000	1,784 KW.	17 arc, 34 mtl.	23=56 H.P.	..
27	BEDFORD	Bedford Corporation	1894	R. W. L. Phillips	105 & 210	60~, 1-ph.	860	560	..	£94,204	1,767 KW.	17 arc, 616 inc.	137 H.P.	..
28	BELFAST	Belfast Corporation	1895	Thos. W. Bloxam	220 & 440 tr. 550	Direct	8,800	6,915	100 A.	£326,432	6,174 KW.	8 arc	5,835 H.P.	464=13,9 H.P.
29	BERWICK-UPON-TWEED	Urban Electric Supply Co., Ltd.	1903	.. .. ..	240 & 480	Direct	180	160	96 KW.	£31,022	313 KW.	17 arc, 17 mtl., 8 Nernst	60=300 H.P.	..
30	BEXHILL-ON-SEA	Bexhill Corporation	1900	W. T. Le Feuvre	220 & 440	Direct	1,150	442	23 KW. for 10 hrs.	£61,000	1,177 KW.	53 arc,374 cbn., 220 mtl.	30=82 H.P.	..
31	BEXLEY	Bexley Urban District Council	1903	C. Mittelhausen	200 & 400A.C., tr. 500 D.C.	50~, 1-ph.	450	302	37 KW.	£16,440*	399 KW.	241 inc. & mtl., 54 N.	14=28.3 H.P.	32=800
32	BIRKDALE	Birkdale District Electric Supply Co., Ltd.	1902	H. Bentham	230 & 460 tr. 550	Direct	390	342	..	£39,000	911 KW.	8 arc, 356 mtl.	6=19¼ H.P.	6=105 H
33	BIRKENHEAD	Birkenhead Corporation	1896	W. Wyld	230 & 460	Direct	1,750	1,042	208 KW.	£130,000 approx.	3,050 KW.	58 arc	146=1,001 H.P.	..
34	BIRMINGHAM	Birmingham Corporation	1891	R. A. Chattock	220 & 440* tr. 550	Direct*	20,540	15,260	1,150 KW.	£1,393,861	11,130 KW.	..	2,398=20,085 H.P.	See other Ta
35	BLACKBURN	Blackburn Corporation	1895	P. P. Wheel-wright	110, 220 A.C., 220&440D.C.*	50~, 1-ph., & direct	5,318	2,972	550 KW.	£275,594	3,254 KW. inc. hg.	208 arc, 470 cbn., 8 mtl.	629 = 2,712½ H.P.†	202=4,655
36	BLACKPOOL	Blackpool Corporation	1893	Charles Furness	200 A.C., 500 D.C.	83~, 1-ph., & direct	4,450	2,584	175 KW.	£201,000	*	279 arc, 464 cbn., 262 N.	156=1,078 H.P.	122=2,214
37	BLYTH & COWPEN, & BEDLINGTONSHIRE	Northern Counties Electricity Supply Co., Ltd.	1902	C. W. Fairweather	230 & 460	Direct	1,000*	675	..	..	622 KW.	2 KW.	1,269 KW. (inc. hg.)	..
38	BOLTON	Bolton Corporation	1894	J. G. Lovely (Res) A. A. Day	100&200A.C.* 230 & 460D.C.	83~, 1-ph.,* & direct	7,600	..	..	£348,285	5,564 KW.	..	915=10,017 H.P.	See other Ta
39	BO'NESS	National Electric Construction Co., Ltd. (for the Corporation)	1905	H. G. Young	230 & 460	Direct	500*	292	36.8 KW.	£35,000	452.4 KW.	30 arc, 87 cbn., 72 mtl.	58=350 H.P.	..
40	BOOTLE	Bootle Corporation	1899	T. Dawson Clothier	220 & 440 tr. 500	Direct	2,050	1,260	150 KW.	£114,628	1,541 KW.	174 arc ; inc. = 680 8-C.P.	2,287 H.P.	325 KW.
41	BOURNEMOUTH	Bournemouth Corporation	1902	I. Bulfin	550	Direct	1,200	1,000	..	£75,000*	..	132 arc	..	See other Ta
42	BOURNEMOUTH, POOLE AND CHRISTCHURCH	Bournemouth & Poole Electric Supply Co., Ltd.	1889	E. Ll. Ingram	100&200A.C.* 250 & 500D.C.	100~, 1-ph., & direct	4,400	2,281	355 KW.	£443,200	6,694 KW.	129 mtl.	192=502 H.P.	52=1,300
43	BRADFORD	Bradford Corporation	1889	Thomas Roles	230&460 D.C., 230 &400 A.C.	Direct, & 50 ~, 3-ph.*	8,180 D.C.	7,922	230 KW. lg. 250 KW. tr.	£765,300 approx.	6,406 KW. inc. bulk	69 arc, 12 cbn.	1,545=6,770 H.P. (ex. bulk)	See other Ta
44	BRAY	Bray Urban District Council	1892	W. J. U. Sowter	100 & 200	60~, 1-ph.	320	190	..	£17,000	388 KW.	33 arc, 200 cbn., 50 mtl.	..	..
45	BRECHIN	North of Scotland Electric Light & Power Co., Ltd.	1901	Ernest Ames (res.)*	240 & 480	Direct	282	102.8	..	£34,074	404 KW.	251 cbn., 5 N.	21=136 H.P.	..
46	BRIDGEND & DIST.	Bridgend Urban District Council	1908	W. Welbury (pro. tem.)	500, 440, 220 A.C.	60~, 2-ph.	470	210	..	£15,600	190 KW.	368 mtl.	506 H.P.	..
47	BRIDGWATER	Bridgwater & District Electric Supply & Traction Co., Ltd.	1904	Harold Walker	230 & 460	Direct	200	103	49 KW.	£24,677	210 KW.	15 arc, 184 inc.	24=96 H.P.	..
48	BRIDLINGTON	Bridlington Corporation	1905	Arthur J. Beckett	220 & 440	Direct	440*	426	480 A.H.	£38,700	628 KW.	52 arc, 450 mtl.	37=104 H.P.	..
49	BRICHOUSE	Brighouse Corporation	1898	A. Aspinall	110	Direct	70	55	23 KW.	£4,674	134 KW.	..	20=40 H.P.	..
50	BRIGHTON	Brighton Corporation	1891	A. Wright (Cons.) J. Christie (Man.)	115, 230, & 460 ; tr. 550	Direct*	7,200	5,400	400 A.H.lg. 1200A.H.tr.	£780,645	9,300 KW.	372 arc, 543 cbn., 3,019 mtl.	460 = 2,468 H.P.†	80=2,400
51	BRISTOL	Bristol Corporation	1893	H. Faraday Proctor	105 & 210A.C. 250 & 500D.C.	93~, 1-ph.* & direct	12,050	5,729	70 KW.	£775,707	6,980 KW.	693 arc, 9 cbn.	1,201 = 9,785 H.P.	..
52	BROMLEY (KENT)	Bromley (Kent) Electric Light & Power Co., Ltd.	1898	R. R. Barker	210	Direct	1,620	657	68 KW.	£131,699	2,440 KW.	3 mtl.	55=150 H.P.	..
53	BROUGHTY FERRY	Broughty Ferry Corporation	1902	J. L. Turnbull	230 & 460	Direct	150	90	250 KW.	£19,461	445 KW.	12 arc, 36 cbn., 4 mtl.	16=56 H.P.	..
54	BUCKINGHAM	Buckingham Electric Light Co.	1889	T. Gillies (Man.)	220	Direct	70	40	..	..	About 66KW.	90 mtl.	2=1½ H.P.	..
55	BUNCRANA	Buncrana Electric Supply Co.	1905	John K. Swan	235 & 470	Direct	125	..	..	..	..	5 arc, 30 cbn.	55 H.P.	..
56	BURGESS HILL	Burgess Hill & District Electric Supply Co., Ltd.	1906	W. Simms	230	Direct	64	50	32 KW.	£5,500	100 KW.	..	12	..
57	BURNLEY	Burnley Corporation	1893	Jas. E. Starkie	110,220 & 440 tr. 500	Direct	2,640	1,772	66 KW. lg. 250 KW.tr.	£112,242	2,187 KW.	3 arc, 12 cbn.	241=710½ H.P.	46=3,460
58	BURSLEM	Burslem Corporation	1905	Ashton Bremner	220 & 440	Direct	1,250	642	70 KW.	£37,850	19,184 KW.	23 arc, 42 cbn.	157=1,008 H.P.	..
59	BURTON-ON-TRENT	Burton-on-Trent Corporation	1894	P. J. Pringle	100 & 200A.C. tr. 500 D.C.	75~, 1-ph., & direct	1,710	500 lg. 375 tr.	..	£83,395	1,045 KW.	1 arc	150=933 H.P.	40=1,000
60	BURY (LANCS.)	Bury Corporation	1896	S. J. Watson	220 & 440 tr. 500	Direct	2,260*	2,065	154 KW.lg. 225 KW.tr.	£117,053	3,219 KW.	36 arc, 21 inc.	314=2,506 H.P.	See other Ta
61	BURY ST. EDMUNDS	Bury St. Edmunds Corporation	1900	S. E. Day	200 & 400	Direct	220	193	60 KW.	£30,000	388 KW.	14 arc, 178 cbn., 242 mtl.	35=187 H.P.	..
62	BUXTON	Buxton Urban District Council	1900	W. J. Loeming	230 & 460	Direct	794	343	..	£46,825	30,423 KW.	30 arc	39=129½ H.P.	..
63	CAMBORNE, REDRUTH AND ILLOGAN	Urban Electric Supply Co., Ltd.	1902	L. A. Hards	240 & 480* tr. 500	Direct, and 25~, 3-ph.	1,025	924	200 KW.lg. 150 KW. tr.	£120,420	496 KW.	2 arc, 220 cbn.	121=1,443 H.P.	20=500 H
64	CAMBRIDGE	Cambridge Electric Supply Co., Ltd.	1892	R. C. Pierce	200	90~, 1-ph.	2,000	598	..	£129,408	1,832 KW.	1 arc	82=211 B.H.P.	..
65	CAMBUSLANG	Lanark County Council	1905	.. .. ..	250	Direct	200	120	53 KW.	£16,201*	163 KW.	20 arc, 6 cbn., 468 mtl., 5 N.	13=43 H.P.	..
66	CANTERBURY	Canterbury Corporation	1890	C. A. Blascheck	220 & 440	Direct	900	465	66 KW.	£37,598	765 KW.	12 arc, 69 cbn., 584 mtl.	96=395 H.P.	..
67	CARDIFF	Cardiff Corporation	1894	Arthur Ellis	200& 400 A.C. & D.C.	40~, 1-ph.,* & direct	1,560 A.C. 1,800 m.g.	2,766	850 KW.	£268,050	4,945 KW.	617 arc, 227 cbn., 143 mtl.	502=3,329 H.P.	..
68	[illegible]	[illegible] Corporation	1899	Sydney T. Allen	230 & 460, tr. 500	Direct	1,170	606	170 A. lg. 700 A. tr.	£67,277	1,084 KW.	52 arc, 20 mtl.	253=760 H.P.	80=450
69	[illegible]	[illegible]	1890	O. St. J. McKee	100 & 200	70~, 1-ph., & direct	115	..	40 KW. for 4 hrs.	..	..	13 arc, 84 inc.	1=67 H.P.	..
[illegible]	[illegible]	[illegible]	1905	D. O. Evans	230 & 460	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	265 KW.	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible] wright	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	1894	Charles Furness	200 A.C.,	83~, 1-ph.,	4,450	2,584	175 KW.	£201,000	*	279 arc, 464 cbn. 262 N.	156=1,078 H.P.	122=2,214

” LIST OF ELECTRICITY SUP

	No. and B.H.P. of private motors.	No. and H.P. of traction motors.	Total connections of all kinds.	Percentage increase during year.	Price charged per unit, pence.	System of charging.	Units sold during last complete year.	Remarks.	
17	707=4,012 H.P.	160=4,000 H.P.	9,083 KW. (ex. tr.)	7.4	Lg. 5½ & 1½; pb. lg. 5½ & 1½; pr. 2½ & 1; tr. 1.127, 2½ (co.)	Max.dem., flat rate, cont. & special	5,170,421	Lg. & tr. stn. Supply extended into two counties. *Also A.C., lg. 230 v., pr. 400 v. Data to July 31, 1909.	1
	4=18 H.P.	..	57 KW. ..	..	Lg. 6 to 3; pb. lg. £2 per 40-watt lamp; pr. 3 to 2	Flat rate, sl. scale, contract & special	..	Supply commenced June, 1910	2
tl.	25 H.P. ..	..	501 KW. ..	2	Lg. 6 w. dis. to 25%; pb. lg. arc £18 13s. p.a.; pr. 2 & 2½	Flat rate with dis.	149,580	Data to Dec. 31, 1908	3
60	241=999 KW	46=1,748 H.P.	3,308 KW.	..	Lg. 4 w. dis.; pb. lg. 3; pr. 3 & 1; htg. 1; tr. 1.8	Flat rate with discounts	2,972,612	Lighting & traction. Data to Mar. 31, 1909	4
bn.	67=229 H.P.	..	1,110 KW.	..	Lg. 5 (shops 4); pb. lg. 4; pr. 2½ & 1, or 1½; htg. 1	Max. dem., flat, 2-rate mtr., cont., spl.	511,212	*Supply in bulk at 10,000 volts A.C. from Met. Elec. Supply Co. Data to Mar. 31, 1908	5
N.	16=51½ H.P.	..	630 KW. ..	7.7	Lg. 7 & 4, or 6; pb. lg 28/-(⅓a.), 38/-(⅓a.); pr. 4 & 1½, or 2½	Max. demand and flat rate	139,340	Data to Dec. 31, 1909	6
tl.,	31=77 H.P.	..	497 KW.	9	Lg. 6 & 4, or 5 (arc 5); pb. lg. £2½ per post p.a.; pr. 3 & 2	Max. demand and flat rate	224,771	Data to Mar. 31, 1909	7
..	16=24 H.P. ..	..	296.4 KW.	..	Lg. 4; pb. lg. 2½; pr. 2	Flat rate	88,951	Bulk supply from British Electric Plant Co.	8
	105 KW. pr. & htg.	..	393 KW.	..	Lg. 5½ & 4; pr. 1½ with discounts	Flat rate & sliding scale	..	*C. W. Fairweather (Mgr.). Cons. engrs. Merz & McLellan. Data to Dec. 31, 1909	9
	20=84 H.P.	..	1,874 KW.	6.4	Lg. 6; pr. 2½ & 1½; htg. 2½ ..	Flat rate, contract and special	436,897	Data to Dec. 31, 1909	10
40	47=606 H.P.	..	628 KW. ..	*	Lg. 5; pr. sl. scale and contract	Flat rate, sliding scale & contract	391,214	*First complete year. Data to Dec. 31, 1909.	11
	5=11.9 KW.	..	245 KW. ..	185.5	Lg. 7 & 5; pr. 2	Flat rate with dis.	60,319	Data to Dec. 31, 1909	12
on.,	164=851 H.P.	180=3,000 H.P.	4,889.5 KW.	5.4	Lg. 3 to 2½ (by cont. 2), 2-rate, 1; pb. lg. 1.19; pr. 1½ to 0.6; tr. 1½ to 1	Sl. scale, 2-rate, con. w. dis., t. switch	2,888,295	Lighting and traction. Energy supplied to four tramway undertakings. Data to Mar. 25, 1910	13
n.,	4713.5 H.P.	35 (average)= 2,000 H.P.	6,452 KW.	14.2	Lg. 3 to 2½, or 6 & 1½ (2-rate); pb. lg. arc £12*; pr. 1½ to ⅔; tr. 1½	Sl. scale w. dis., 2-rate mr., cont.&spl.	4,583,943	Lighting and traction. *Incand. £1 per post per ann. Data to March 31, 1910	14
..	20=173 H.P.	..	200 KW.	..	Lg. 4 to 3 & spl. for mills (ch. 4½); pr. 1½ to ⅔; htg. 2	Flat rate, sl. scale, cont. & special	91,827	*Supply in bulk at 7,000 v. A.C. from South Lancs. Tramways Co., Ltd. Data to Mar. 31, 1909	15
on., N.	1100=331 H.P.	32=800 H.P.	2,730 KW.	7	Lg. 4; pb. lg. 2; pr. 2 to 1½; tr. 1.23	Flat rate	1,444,469	Lighting and traction. *Traction 550 v. Data to May 15, 1909	16
	40=250 H.P.	..	546 KW. ..	15	Lg. 7 & 2½ (4½ max. average); pr. 1½	Max. demand and flat rate	152,949	Data to Dec. 31, 1909	17
	23=113 H.P.	..	508 KW. ..	2½	Lg. 5 & 3 (2-rate); pr. 2½ to 1½	Lg. flat rate & 2-rate mtr., pr. sl. sc.	176,077	Data to Mar. 31, 1910	18
nc., t N.	64=493 H.P.	24=600 H.P.	1,476.5 KW.	..	Lg. 4½; pb. lg. 1.99; pr. 8½ to 1; tr. 1½	Flat rate & sliding scale	769,089	Lighting and traction	19
	55=366 KW.	..	2,018 KW.	1.6	Lg. 5½ w. dis. to 25%; pb. lg. 1.56; pr. 1½ w. dis. to 33⅓%; htg. 1½	Sliding scale with discounts	925,300	Data to March 31, 1910	20
41	120	..	2,204 KW.	8.5	Lg. 7 & 1½, or 3½, dis. 5%; pr. 1½ & sliding scale	Max. dem, flat rate & sl. scale with dis.	1,491,945	Data to Mar. 31, 1910	21
on.	26=70 H.P.	..	618 KW.	..	Lg. 5 & 4½; pb. lg. 4½; pr. 2, 2½, & 3	Flat rate w. dis., 2-rate mtr., & special	221,059	Data to Mar. 31, 1909	22
on.,	168=782 KW.	32=752 H.P.	3,162 KW.	5.2	Lg. 6 & 3, or 4½ & 4*; pr. 3 & 1, or 2 to 1½ (day 1); tr. 2 to 1½	Max. dem., flat, sl. sc., 2-rate & cont.	1,130,092	Lighting and traction. *Pb. lg. arc £17½, inc. £3 and £2½. Data to Mar. 31, 1910	23
on.,	141=476 H.P.	..	2,583 KW.	4.28	Lg. 5; pb. lg. arc £24, inc. £6; pr. 1½	Flat rate, 2-rate mtr., & cont., w. dis.	1,475,811	Supply by company 1890-7. Data to March 31, 1909 ..	24
nc.	72=239.4 KW.	32=1,173 H.P.	1,644 KW.	17	Lg. 6 & 2; pb. lg. arc £16; pr. 3 & 1; tr. 1½	Max. demand & flat rate	737,396	Lighting and traction. Data to Mar. 31, 1909	25
tl.	23=56 H.P.	..	1,956 KW.	7.6	Lg. 5*; pb. lg. arc £20 p.a.; pr. 2 & 1½	Flat rate	911,840	*Free wiring 5d. per unit plus fittings rentals. Data to Mar. 31, 1909	26
nc.	187 H.P. ..	..	1,933 KW.	..	Lg. 5½; pr. 1	Flat rate	911,000	.. ..	27
..	5,835 H.P. ..	464=13,920 H.P.	20,911 KW.	7.5	Lg. 5½ & 1½, or 3½; pb. lg. arc £15 p.a.; pr. 2½ to 1	Max. demand & flat rate	12,080,477	Lg. & traction. 3-phase 50~ to substns. at 6,000 v. Data to March 31, 1910	28
tl.,	60=300 H.P.	..	562 KW. ..	7	Lg. 6 & 3; pb. lg. arc £17 p.a.; pr. 4 & 1½, spl. to large users	Max. dem., flat rate, 2-rate mtr. & cont.	253,857	Data to Dec. 31, 1909	29
on.,	30=82 H.P.	..	1,236 KW.	9.9	Lg. 7, 2 & 1½; pb. lg. arc £23, inc. £8 & £4.6; pr. 2*	Max. demand & flat rate	556,816	*Prepl. meters 6d. per unit. Data to March 31, 1908 ..	30
& . atl.	14=28.3 H.P.	32=800 H.P.	1,167.3 KW. (approx.)	..	Lg. 6†; pb. lg. cbn. £3½, N. £4½ p.a.; pr. 3 to 2 (day), or 6 & 2	Flat rate	562,557	Tr. stn. giving bulk supply for lg. *Also £5,137 spent on pr. stn. †Less 2½%—14 days. Data to Mar. 31, 1909	31
..	6=19½ H.P.	6=105 H.P.	1,023 KW.	11	Lg. 4½; pb. lg., pr. & tr. 2 ..	Flat rate	864,696	Lighting and traction. Data to Dec. 31, 1909	32
..	146=1,001 H.P.	..	3,788 KW.	6½	Lg. 6, 3 & 1½, or 4; pb. lg. arc £18½; pr. 2 to 1	Max. dem., flat, sl. scale, 2-rate & cont.	1,543,492	Data to Mar. 31, 1910	33
	2,398=20,085 H.P.	See other Table	28,003 KW. (ex. tr.)	25.04	Lg. 4 to 2 (spl. 2½ to 2); pr. 1.35 to 0.7; tr. 1½ to 1	Flat rate with discount	29,079,276	Lighting and traction. Data to Mar. 31, 1910. * Three ph., 25~ at 5,000 v. to substns. and to large consumers	34
70 tl. 54 N.	629 = 2,712½ H.P.†	202=4,655 H.P.	10,068 KW.	11.6	Lg. 6 & 3 (1 hr.) or 4; pb. lg. 1.3; pr. 1½ to 0.45; tr. 1.4	Max. dem.,flat w. dis. sl. scl.,2-rate & t. sw.	4,308,005	Lg. and tr. *Traction, 500 v. D.C. †Including 304 motors=1216 H.P. on hire. Data to Mar. 25, 1910	35
..	156=1,078 H.P.	122=2,214 H.P.	*	*	Lg. 6 & 2, or 5; pb. lg. 3 & 2½; pr. 3 & 1 (htg. 1); tr. 2 to 1½	Max. dem.,flat rate and sliding scale	3,052,360	Lg. and tr. *Cannot be stated at present, owing to genl. adoption of mtl. fil. lamps. Data to Mar. 31, 1909	36
..	1,269 KW. (inc. htg.)	..	1,893 KW.	..	Lg. 4; pr. 2½ to 1½	Flat rate, sl. scale & contract	..	*Used as stand-by; Bulk supply from Nc. o/T. E. S. Co. Cons. engrs. Merz & McLellan. Data to Dec. 31, 1909	37
	915=10,017 H.P.	See other Table	13,033 KW.	11	Lg. 3½ & 1, or 3½ less 10%; pr. 2 to 1, less 10 per cent.; tr. 1.1	Max. demand & flat rate	11,993,271	Lighting and traction station. *Also three-phase supply at 400 v., 50~. Data to March 31, 1910	38
on.,	58=350 H.P.	..	718.5 KW.	49	Lg. 5 with dis. & spl.; pb. lg. contract; pr. 2½	Flat rate and contract	593,000 (estd.)	*Also stand-by supply=150 H.P. Data to May 15, 1910	39
.. =	2,237 H.P. ..	325 KW. ..	3,912 KW.	7.2	Lg. 6 & 1½, or 3½; pb. lg. 2; pr. 2 to 1; tr. 1½ to 1	Max. demand and flat rate	2,761,933	Lighting and traction. Data to Mar. 31, 1910	40
..	..	See other Table	..	..	Pb. lg. 2	Flat rate	1,890,580	Public lighting & traction station (92½% of output for traction.) *Station plant and cables. Data to Mar. 31, '09	41
	192=502 H.P.	52=1,300 H.P.	7,522 KW.	8.25	Lg. 7 & 3½, 8% or 6½; pr. 2 & 2½; tr. 1⅝	Max.dem.,flat,w.d., 2-rate, cont. & spl.	2,950,437	Lighting and traction. *Also 400 v. A.C., and traction 580 v. D.C. Data to December 31, 1909	42
on.	1,545=6,770 H.P. (ex. bulk)	See other Table	14,388 KW. ex. tr.	5.02	Lg. 4 w. dis.†; pb. lg. arc £12½; pr. 2 to ⅔; htg. 2 to 1; tr. 1½(2½ nt.)	Flat rate, max.dem., sl. scale & time sw.	17,000,000 (approx.)	Lg. & tr. Lamps free (one p. 30 n.). *50~3-ph. at 6,600 v. to substns. Tr. 500 D.C. †Also 7d. & 1d. m.d. Data to 31/3/10	43
on.,	..	..	420 KW. ..	4	Lg. & pr., 6 & 3½; pb. lg., arc £15, inc. £2 p.a.	Max. demand ..	167,260	District residential, no industries, hence no power load. Data to March 31, 1909	44
N.	21=136 H.P.	..	546 KW. ..	3	Lg. 6 & 4, or 5½; pb. lg. 2.9; pr. 4 & 1½, or 2½	Max. dem., flat rate, 2-r. & cont.	113,265	* F. Barritt Hills, Engineer & Manager	45
	506 H.P.	..	567 KW.	..	Lg. 4½; pb. lg. 3; pr. 1½; htg. 2½	Flat rate	387,287	7 large motors work occasionally only, from 5 to 150 H.P. Data to Mar. 31, 1910	46
4	24=96 H.P.	..	300 KW.	14	Lg. 7 & 2, or 4½ to 4; pr. 3 & 1, or 2	Max. demand & flat rate	107,592	Data to Dec. 31, 1909	47
atl.	37=104 H.P.	..	793 KW.	12.6	Lg. 5 to 3½; pb. lg. arc £15, inc. & N. £4; pr. 2 to 1½	Flat rate & sliding scale	333,305	*300 KW. being installed. Data to Mar. 31, 1910. . ..	48
	20=40 H.P.	..	170 KW.	4	Lg. 5; pr. 4, 3 & 2	Flat rate	52,482	Gas power. Data to Mar. 31, 1909	49
43 atl. on.	460 = 2,468 H.P.†	80=2,400 H.P.	11,650 KW. (ex. tr.)	4.7	Lg. 6 & 2 m.d. 4d. & 3d. flat; pb. lg. 1½; pr. 1½ (t. sw. 1); tr. 1.35	Max. dem.,flat, sl. sc., t. sw., cont.w.d.,&spl.	9,000,000	Lg. & tr. *8,000 v. 3-ph. 50~to substations. †Including 189 motors=947 H.P. on hire. Data to Mar. 31, 1910	50
	1,201 = 9,785 H.P.	..	13,376 KW.	8.9	Lg. 4½ w.dis. to 3.15; pb. lg. arc £21, £14½ per lp. p.a.; pr. 1½ w. dis.to 1.2	Max. dem., flat rate w. dis., 2-rate, special	7,363,941	*Also 50~, 3-phase, at 210 volts. Data to Mar. 25, 1910	51
	55=150 H.P.	..	2,944 KW.	6	Lg. 7 & 4, or 6; pr. 4 & 1, or 2½; bulk supply 2	Max. demand, flat rate & 2-r. mtr.	840,382	54 KW. bulk supply to Chislehurst at 2,000 volts D.C. Data to Dec. 31, 1909	52
on.,	16=56 H.P.	..	506 KW. ..	3	Lg. 5½; pb. lg. 2½; pr. 3 ..	Flat rate w. dis. ..	106,236	Data to May 15, 1909	53
	2=1½ H.P. ..	..	70 KW. ..	..	Lg. 7 w. dis.; pb. lg. contract ..	Flat rate	..	Part gas power. Data to Dec. 31, 1909	54
n.	55 H.P. ..	..	..	..	Lg. 5; pb. lg. contract; pr. 1½..	Flat rate with discount	..	Data to May 15, 1910	55
	12	..	120 KW. ..	31.5	Lg. 6; pr. 4	Flat rate	25,000	Suction gas power; overhead mains. Data to Sept., 1909	56
n.	241=710½ H.P.	46=3,460 H.P.	5,297 KW.	12	Lg. 3½; pb. lg. 1½; pr. 1½ & 1; tr. 1½	Lg., flat rate; pr., max. dem. w. dis.	3,249,387	Lighting and traction. Data to Mar. 31, 1910	57
n.	157=1,008 H.P.	..	..	..	Lg. 7 & 2, or 5; pb. lg. 3; pr. 2 to ⅓	Max. demand, flat rate & sl. scale	953,677	Data to Dec. 31, 1909	58
.	150=938 H.P.	40=1,000 H.P.	1,748 KW.	9.7	Lg. 5, or 6 & 3; pb. lg. 3; pr. 1 to ⅔, or 3 & 1, or 2 to 1½*; tr. av. 1.37	Max. demand, flat rate, & sl. scale	1,529,517	Lighting and traction. *Pr., 80% of total on restricted-hour system. Data to Mar. 31, 1910	59
c.	314=2,506 H.P.	See other Table	5,317 KW.	..	Lg. 3½, 3½, 2½; pb. lg. arc £11½ & £13½, inc. £1½; pr. 1½, 1 & ⅔; tr. 1	Flat rate & sliding scale	3,911,838	LLighting and traction. Data to Mar. 31, 1910 (part 1910). *4,000 KW. being installed	60
n.,	35=187 H.P.	..	527 KW.	8	Lg. 6 (dis. to 8½%) pb. lg. arc £14, inc. £2; pr. 3 to 2½* w.dis.	Flat rate with discounts & special	327,857 (approx.)	*Corp. waterworks, 50 H.P., supplied at 1.25d. per unit average. Data to Mar. 31, 1910	61
..	39=123½ H.P.	..	1,004 KW.	11.1	Lg. 6, 7 & 3, 2; pb. lg. arc £20 p.a.; pr. 2½, 1½, 1½	Max. dem., flat & sl. scale with dis., etc.	316,030	Max. load in September; load through season heavier than in winter. Data to Mar. 31, 1910	62
on.	131=1,443 H.P.	20=500 H.P.	2,112 KW.	14	Lg. 7 & 4, or 6; pb. lg. contract; pr. 4 & 1, or 2½; tr. 1½	Max. demand, flat rate & contract	2,729,439	Lighting and traction. *Also A.C. at 3,000 v. Data to Dec. 31, 1909	63
..	82=211 B.H.P.	..	1,945 KW.	10	Lg. 6 on 200 v., 7 on 100 v., with spcl. discounts; pr. 3½ to 1½	Flat rate with discounts, & contract	621,448	Data to Dec. 31, 1909	64
n., N., m.,	13=43 H.P.	..	237 KW.	..	Lg. 4; pb. lg. 2; pr. 2	Flat rate	100,000 est.	*Also destructor, £7,000. Energy obtained from refuse almost entirely. Data to May 15, 1909	65
	96=395 H.P.	..	1,118 KW.	6.9	Lg. 7 & 1½, or 4½; pb. lg. arc £25, inc. £3½ p.a.*; pr. 1½	Max. demand and flat rate	688,852	*Two tant. 23 C.P. each, or two Osram 25 C.P., or one ebn., 25 C.P. Data to Mar. 31, 1910.	66
37 tl.	502=3,399 H.P.	..	7,890 KW.	10.5	Lg. 7 & 2, or 3½; pb. lg. arc £14, flame £20, p.a.†; pr. 4 & 1, or 1½	Max. dem., flat rate, sl. scl., 2-rate mtr.	4,548,898	*Tr.dept. sup. 3-ph. 6600 v., 50~ & 400 v., D.C. at ¾d. p.u. †Inc. £2 15s. & £4 1s. p.a. Data 31/3/10	67
tl.	253=760 H.P.	30=450 H.P.	1,860 KW.	15.5	Lg. 5 to 4*; pb. lg. arc £21 13s 4d & £15; pr. 1(restd. hrs. 3½); tr. 2 to 1½	Max. demand, flat, sl. sc., 2 rate & spl.	1,298,576	Lighting and traction. *Also £7 per KW. m.d. & 2d. per unit. Data to Mar. 31, 1910	68
nc.	1=67 H.P. ..	..	117 KW. ..	..	Lg. 7½ w. dis. (=6 to 9½); pb.	Flat rate with dis.	69,479	5 miles overhead mains to Clarke, W[illegible]	69

	Place.	
	229 LIMERICK	
	230 LINCOLN	
	231 LIVERPOOL	
	232 LLANDILO	
	233 LLANDRINDOD WELLS	
	234 LLANDUDNO	
	235 LLANCOLLEN	
	236 LLANRWST AND TREFRIW	
LONDON.	237 BATTERSEA	
	238 BERMONDSEY	
	239 CHELSEA	
	240 CITY OF LONDON ..	
	241 FINSBURY	
	242 FULHAM	
	243 GREENWICH, LEWISHAM, PENGE & SYDENHAM	
	244 HACKNEY	
	245 HAMMERSMITH ..	
	246 HAMPSTEAD	
	247 ISLINGTON	
	248 KENSINGTON	
	249 KENSINGTON (N. OF HIGH STREET)	
	250 KENSINGTON AND KNIGHTSBRIDGE	
	251 KENSINGTON AND NOTTING HILL	
	252 LAMBETH	
	253 LONDON* & WESTMINSTER	
	254 MARYLEBONE	
	255 MID LONDON AND PADDINGTON	
	256 POPLAR	
	257 ST. JAMES' WESTMINSTER	
	258 ST. PANCRAS	
	259 SHOREDITCH	
	260 SMITHFIELD MARKETS	
	261 SOUTHWARK	
	262 STEPNEY	
	263 STOKE NEWINGTON ..	
	264 WANDSWORTH	
	265 WESTMINSTER ..	
	266 WESTMINSTER & ST. JAMES	
	267 WESTMINSTER, HOLBORN & CITY OF L.	
	268 WOOLWICH, PLUMSTEAD & ELTHAM	
	269 LONDONDERRY	
	270 LONG EATON	
	271 LONG EATON	
	272 LONGTON	
	273 LOUGHBOROUGH ..	
	274 LOWESTOFT	
	275 LUDLOW	
	276 LUTON	
	277 LYME REGIS	
	278 LYMINGTON	
	279 LYNTON & LYNMOUTH	
	280 MACROOM	
	281 MAIDENHEAD	
	282 MAIDSTONE	
	283 MALTON & NORTON	
	284 MALVERN	
	285 MANCHESTER	
	286 MANSFIELD	
	287 MARDY (CLAM.) ..	
	288 MARGATE & BROADSTAIRS & S. PETERS	
	289 MARKET DRAYTON ..	
	290 MELROSE	
	291 MELTON MOWBRAY ..	
	292 MERTHYR TYDFIL ..	
	293 MEVAGISSEY	
	294 MEXBOROUGH	
	295 MIDDLESBROUGH ..	
	296 MIDDLETON	

	[illegible] Corporation	1899	Sydney T. Allen	230 & 460, tr. 500	& D.C. Direct ..	1,800 m.g. 1,170	805	170 A. lg. 700 A. tr.	£67,277	1,084 KW.	cbn., 142 mtl. 52 arc, 20 mtl.	502=3,329 H.P. 253=760 H.P.	30=45			
	[illegible]	1890	O. St. J. McKee	100 & 200	70~, 1-ph., & direct	115	..	40 KW. for 4 hrs.	..	68 KW.	13 arc, 84 inc.	1=67 H.P. ..				
	[illegible]	1908	D. O. Evans	230 & 460	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				
36	BLACKPOOL	Blackpool Corporation ..	1893	Charles Furness	200 A.C., 500 D.C.	83~, 1-ph., & direct	4,450	3,864	170 KW.	£301,500	*	210 arc, 464 cbn., 382 N.	166=1,078 H.P.	175=		
37	BLYTH & COWPEN, & BEDLINGTONSHIRE	Northern Counties Electricity Supply Co., Ltd.	1902	C. W. Fairweather J. G. Lovely (Res)	230 & 460	Direct ..	1,000*	675	..	..	622 KW.	2 KW. ..	1,269 KW. (inc. hg.)			
38	BOLTON	Bolton Corporation	1894	A. A. Day ..	100&200A.C.* 230 & 460D.C.	83~, 1-ph.,* & direct	7,600	..	..	£348,285	5,564 KW.	..	915=10,017 H.P.	See ot		
39	BO'NESS	National Electric Construction Co., Ltd. (for the Corporation)	1905	H. G. Young ..	230 & 460	Direct ..	500*	292	36.8 KW.	£35,000	452.4 KW.	30 arc, 87 cbn., 72 mtl.	58=350 H.P.			
40	BOOTLE	Bootle Corporation	1899	T. Dawson Clothier	220 & 440 tr. 500	Direct ..	2,050	1,260	150 KW.	£114,628	1,541 KW.	174 arc ; inc. = 680 8-C.P.	2,237 H.P. ..	325 K		
41	BOURNEMOUTH ..	Bournemouth Corporation ..	1902	I. Bulfin ..	550	Direct ..	1,200	1,000	..	£75,000*	..	132 arc ..	..	See ot		
42	BOURNEMOUTH, POOLE AND CHRISTCHURCH	Bournemouth & Poole Electric Supply Co., Ltd.	1889	E. Ll. Ingram ..	100&200A.C.* 250 & 500D.C.	100~, 1-ph., & direct	4,400	2,281	355 KW.	£443,200	6,694 KW.	129 mtl.	192=502 H.P.	52=1,3		
43	BRADFORD	Bradford Corporation ..	1889	Thomas Roles ..	230&460 D.C., 230 &400 A.C.	Direct, & 50 ~, 3-ph.*	8,180 D.C.	7,922	230 KW. lg. 250 KW. tr.	£765,300 approx.	6,406 KW. inc. bulk	69 arc, 12 cbn.	1,545=6,770 H.P. (ex. bulk)	See ot		
44	BRAY	Bray Urban District Council	1892	W. J. U. Sowter	100 & 200	60~, 1-ph.	320	130	..	£17,000	383 KW.	33 arc, 200 cbn., 50 mtl.	..			
45	BRECHIN	North of Scotland Electric Light & Power Co., Ltd.	1901	Ernest Ames (res.)*	240 & 480	Direct ..	282	102.8	..	£34,074	404 KW.	251 cbn., 5 N.	21=136 H.P.			
46	BRIDGEND & DIST. ..	Bridgend Urban District Council	1908	W. Welbury (pro. tem.)	500, 440, 220 A.C.	60~, 2-ph.	470	210	..	£15,600	190 KW.	368 mtl.	506 H.P.			
47	BRIDGWATER	Bridgwater & District Electric Supply & Traction Co., Ltd.	1904	Harold Walker..	230 & 460	Direct ..	200	103	49 KW.	£24,677	210 KW.	15 arc, 184 inc.	24=96 H.P.			
48	BRIDLINGTON	Bridlington Corporation ..	1905	Arthur J. Beckett	220 & 440	Direct ..	440*	426	480 A.H.	£38,700	628 KW.	52 arc, 450 mtl.	87=104 H.P.			
49	BRIGHOUSE	Brighouse Corporation ..	1898	A. Aspinall ..	110	Direct ..	70	55	22 KW.	£4,674	134 KW.	..	20=40 H.P.			
50	BRIGHTON	Brighton Corporation ..	1891	A. Wright (Cons.) J. Christie (Man.)	115, 230, & 460 ; tr. 550	Direct* ..	7,900	5,400	400 A.H.lg. 1200A.H.tr.	£780,645	9,900 KW.	372 arc, 543 cbn., 3,019 mtl.	460 = 2,468 H.P.†	80=2,4		
51	BRISTOL	Bristol Corporation	1893	H. Faraday Proctor	105 & 210A.C. 250 & 500D.C.	93~, 1-ph.* & direct	12,050	5,729	70 KW.	£775,707	6,980 KW.	693 arc, 9 cbn.	1,201 = 9,785 H.P.			
52	BROMLEY (KENT) ..	Bromley (Kent) Electric Light & Power Co., Ltd.	1898	R. B. Barker ..	210	Direct ..	1,620	657	68 KW.	£191,699	2,440 KW.	3 mtl.	55=150 H.P.			
53	BROUGHTY FERRY ..	Broughty Ferry Corporation	1902	J. L. Turnbull ..	230 & 460	Direct ..	150	90	250 KW.	£19,461	445 KW.	12 arc, 36 cbn., 4 mtl.	16=56 H.P.			
54	BUCKINGHAM	Buckingham Electric Light Co.	1889	T. Gillies (Man.)	230	Direct ..	70	40	..	..	About 66KW.	90 mtl.	2=1½ H.P. ..			
55	BUNCRANA	Buncrana Electric Supply Co.	1905	John K. Swan ..	235 & 470	Direct ..	125	..	..	..	..	5 arc, 30 cbn.	55 H.P. ..			
56	BURGESS HILL	Burgess Hill & District Electric Supply Co., Ltd.	1906	W. Simms ..	230	Direct ..	64	50	32 KW.	£5,500	100 KW.	..	12			
57	BURNLEY	Burnley Corporation ..	1893	Jas. E. Starkie..	110,220 & 440 tr. 500	Direct ..	2,640	1,772	66 KW. lg. 250 KW. tr.	£112,242	2,187 KW.	3 arc, 12 cbn.	241=710½ H.P.	46=3,46		
58	BURSLEM	Burslem Corporation	1905	Ashton Bremner	230 & 440	Direct ..	1,250	642	70 KW.	£37,850	19,184 KW.	23 arc, 42 cbn.	157=1,008 H.P.			
59	BURTON-ON-TRENT ..	Burton-on-Trent Corporation	1894	P. J. Pringle ..	100 & 200A.C. tr. 500 D.C.	75~, 1-ph., & direct	1,710	500 lg. 375 tr.	..	£33,395	1,045 KW.	1 arc ..	150=933 H.P.	40=1,00		
60	BURY (LANCS.) ..	Bury Corporation	1896	S. J. Watson ..	220 & 440 tr. 500	Direct ..	2,360*	2,065	154 KW. lg. 225 KW. tr.	£117,053	3,219 KW.	36 arc, 21 inc.	314=2,506 H.P.	See othe		
61	BURY ST. EDMUNDS ..	Bury St. Edmunds Corporation	1900	S. E. Day ..	200 & 400	Direct ..	290	193	60 KW.	£30,000	388 KW.	14 arc, 178 cbn., 242 mtl.	35=187 H.P.			
62	BUXTON	Buxton Urban District Council	1900	W. J. Leeming..	230 & 460	Direct ..	794	343	..	£46,325	30,423 KW.	30 arc ..	89=1233½ H.P.			
63	CAMBORNE, REDRUTH AND ILLOGAN	Urban Electric Supply Co., Ltd.	1902	L. A. Hards ..	240 & 480* tr. 550	Direct, and 25~, 3-ph.	1,025	924	200 KW. lg. 150 KW. tr.	£120,420	496 KW.	2 arc, 220 cbn.	121=1,443 H.P.	20=500		
64	CAMBRIDGE	Cambridge Electric Supply Co., Ltd.	1892	R. C. Pierce ..	200	90~, 1-ph.	2,000	598	..	£129,408	1,832 KW.	1 arc ..	82=211 B.H.P.			
65	CAMBUSLANG	Lanark County Council ..	1905	.. .. ..	250	Direct ..	200	120	53 KW.	£16,291*	163 KW.	20 arc, 6 cbn., 468 mtl., 5 N.	13=43 H.P.			
66	CANTERBURY	Canterbury Corporation ..	1899	C. A. Blascheck	220 & 440	Direct ..	900	465	66 KW.	£37,593	765 KW.	12 arc, 69 cbn., 584 mtl.	96=395 H.P.			
67	CARDIFF	Cardiff Corporation	1894	Arthur Ellis ..	200& 400 A.C. & D.C.	40~, 1-ph.,* & direct	1,560 A.C. 1,800 m.g.	2,766	850 KW.	£268,050	4,946 KW.	617 arc, 227 cbn., 142 mtl.	502=3,329 H.P.			
68	CARLISLE	Carlisle Corporation	1899	Sydney T. Allen	230 & 460, tr. 500	Direct ..	1,170	805	170 A. lg. 700 A. tr.	£67,277	1,084 KW.	52 arc, 20 mtl.	253=760 H.P.	30=450		
69	CARLOW	J. Alexander	1890	O. St. J. McKee	100 & 200	70~, 1-ph., & direct	115	..	40 KW. for 4 hrs.	..	68 KW.	13 arc, 84 inc.	1=67 H.P. ..			
70	CARNARVON	National Electric Construction Co., Ltd.*	1905	D. O. Evans ..	230 & 460	Direct ..	200	129	33 KW.	..	365 KW.	..	31=195 H.P.			
71	CATERHAM	Urban Electric Supply Co., Ltd.	1908	Henry Joseph ..	240 & 480	Direct ..	178	82	86.4 KW.	£34,336	354 KW.	..	68 KW. inc. htg.			
72	CHACFORD	Chagford & Devon Electric Light Co., Ltd.	1891	Geo. H. Reed ..	100	99~, 1-ph.	22	19	..	..	..	22 mtl.	..			
73	CHELMSFORD	Electric Supply Corporation, Ltd.	1890	K. A. Scott-Moncrieff*	100 & 200A.C., 110 D.C.	100~, 1-ph., & direct	860	377	..	£63,835	680 KW.	21 arc, 302 Nernst	65=230½ H.P.			
74	CHELTENHAM & CHARLTON KINGS	Cheltenham Corporation ..	1895	Walter J. Bache	100 & 200 tr. 550	100~, 1-ph., & D.C. for tr.	2,890	1,316	165 KW.	£154,076	2,000 KW.	388 arc, 19 cbn., 6 mtl.	49=121 H.P.	40=1,240		
75	CHEPSTOW	Chepstow Electric Lighting & Power Co., Ltd.	1904	G. L. Coventon	230	Direct ..	100	47.5	46 KW.	.. ..	93 KW.	10 mtl. ..	2=6 H.P.			
76	CHESHAM AND CHESHAM BOIS	Chesham Electric Light & Power Co., Ltd.	1904	R.J.J.Swan(Res.)	200, 230 & 460	Direct &50 ~ 3-ph.(C. B.)	250	175	100 A. for 2½ hrs.	£28,753	189 KW.	9 arc, 124 cbn., 75 mtl.	50=250 H.P.			
77	CHESTER	Chester Corporation	1896	S. E. Britton ..	210 & 420, tr. 500	Direct ..	1,323	1,320	273 KW. est 140 KW. tr.	£120,730	1,814 KW.	212 arc, 354 cbn. 350 mtl., 179 N.	128=530 H.P.	36=1,230		
78	CHESTERFIELD	Chesterfield Corporation ..	1901	R. L. Acland ..	240 & 480 tr. 500	Direct ..	1,000	491 l. & p. 300 tr.	150 KW.	£56,878	1,816 KW.	24 arc, 48 mtl.	158=730 H.P.	30=760		
79	CHICHESTER	Chichester Electric Light & Power Co., Ltd.	1909 (June10)	R. V. Weare (Res.)*	220 & 440	Direct ..	230	66	75 KW.	..	100 KW.	..	5=17 H.P.			
80	CHISLEHURST	Chislehurst Electric Supply Co., Ltd.	1899	R. B. Baker ..	210	Direct ..	220*	92	53 KW.	£27,197	504 KW.	..	..			
81	CHISWICK	Chiswick Electricity Supply Corporation, Ltd.	1900	A. W. Money ..	220 & 440	Direct ..	921	560.2	132 KW.	..	1,075.7 KW.	..	67=366 H.P			
82	CHURCH STRETTON ..	Church Stretton Electric Supply Co., Ltd.	1904	G. Payne ..	200 & 400	Direct ..	100	..	..	..	..	..	1=2 H.P. ..			
83	CLACTON-ON-SEA ..	Clacton-on-Sea Urban District Council	1906	H. W. Everitt ..	230 & 460	Direct ..	300	..	200 A. for 3 hrs.	£10,000	..	..	..			
84	CLECKHEATON	Cleckheaton Urban District Council	1902	A. Pickersgill ..	230 & 460 tr. 550	Direct ..	800	500	115 KW.	£28,357	..	5 arc., 32 mtl.	88=488 H.P.	600 H.P.		
85	COATBRIDGE AND AIRDRIE	Coatbridge and Airdrie Electric Supply Co., Ltd.	1894	F. J. Launchbury	240&480D.C., 400 A.C.*	Direct and 25~,3-ph.,	2,990†	1,500	480 A.H.	..	750 KW.	10 arc., 20 mtl., 140 N.	1,900 H.P. ..	..		
86	COLCHESTER	Colchester Corporation ..	1898	.. .. ..	210 & 420 tr. 500	Direct ..	2,080	895	..	£88,019	1,517 KW.	110 mtl., 242 Nernst	50=133 KW.	33=816 H		
87	COLNE	Colne Corporation	1901	A. G. Cooper ..	240 & 480 tr. 540	Direct ..	1,130	480	..	£47,791	513 KW.	2 arc. ..	171=417 H.P.	24=672 H		
88	COLWYN BAY	Colwyn Bay Urban District Council	1901	A. R. Tudman ..	230 & 440	Direct ..	*420	350	44 KW.	£34,634	523 KW.	75 arc, 12 posts mtl., 1 Nernst	15=94 H.P.	..		
89	CORK	Cork Electric Tramways and Lighting Co., Ltd.	1898	H. H. Nalder ..	230 & 460 tr. 500	Direct* ..	2,680	1,487 (ex. tr.)	300 KW.	£329,010†	1,956 KW.	90 arc ..	316=2,228½ H.P.	70=1,380		
90	COVENTRY	Coventry Corporation ..	1895	Geo. Tough ..	230 A.C.	50~, 2-ph.	3,900	3,754	..	£241,098	1,875 KW.	117 arc, 2 mtl.	601=5,823½ H.P.	..		
91	CRAWLEY	Sussex Electricity Supply Co.	1908	Edward Prior ..	230	Direct ..	80	50	40 KW.	£4,000	40 KW.	..	6=20 H.P. ..	..		
92	CREWE	Crewe Corporation	1900	H. H. Denton ..	230 & 460	Direct ..	700	440	150 KW.	£55,058	758 KW.	34 arc, 500cbn., 246 mtl.	52=195 H.P.	..		
93	CROMER	Cromer Electric Supply ..	1908	W. Bentley ..	240 & 480	Direct ..	180	146	19 KW.	£32,877	372 KW.	10 arc, 4 cbn. 6 mtl.	22=31 KW. ..	..		
94	CROYDON	Croydon Corporation.. ..	1896	Alec. C. Cramb..	200A.C.,230 & 460 D.C.*	60~, 1-ph. & direct	5,750	3,319	156 KW.	£351,044	6,029 KW.	419 arc, 317 mtl.	227=1,070 H.P.	200=5,000		
95	DALKEITH	Electric Supply Corporation Ltd.	1904	K. A. Scott-Moncrieff*	225 & 450	Direct ..	110	47	58 KW.	£15,800	124 KW.	27 arc, 16 mtl., 14 N.	29=74½ H.P.	..		
96	DARLINGTON	Darlington Corporation ..	1900	J. R. P. Lunn ..	230 & 460 tr. 500	Direct ..	1,970	1,211	868 KW.	£73,934	1,352 KW.	55 arc ..	210=2,093 H.P.	32=800 H		
97	DARTFORD	Dartford Urban District Council	1901	J. D. Pember ..	230 & 460 tr. 500	Direct ..	700	547	50 KW. lg. 125 KW. tr.	..	423 KW.	6 arc, 261 mtl.	59=588 H.P.	12=600 H		
98	DARTMOUTH	Urban Electric Supply Co., Ltd.	1902	G. E. Smith ..	240 & 480	Direct ..	330	223.8	168 KW.	£54,718	688 KW.	10 arc, 188 cbn., 20 mtl.	29=193 H.P.	..		
99	DARWEN	Darwen Corporation	1899	Chas. Garnett ..	230 & 460 tr. 500	Direct ..	900	620	117 KW.	£37,846	631.6 KW.	19 arc, 1 cbn., 32 mtl., 111 N.	113=413 H.P.	32=1,120 H		
100	DENNY AND DUNIPACE	Denny and Dunipace Corporation	1908	Andrew G. Merriles	230 & 400	50~, 3-ph.	..	..	..	£1,077	10 KW.	38 mtl. ..	..	..		
101	DERBY	Derby Corporation	1893	T. P. Wilmshurst	230 & 460 D.C. 200 A.C. tr. 500	40~, 1-ph. & direct	5,000	2,800	375 A.	£300,000	4,800 KW.	186 arc, 518 cbn.	180=2,850 H.P.	98=2,000 H		
102	DEVONPORT	Devonport Corporation ..	1901 tr. 1902 lg.	J. W. Spark ..	230, 460 & 500	Direct ..	1,800	981	270 A. lg., 1,000 A. tr.	£123,690	987 KW.	20 arc, 1 inc.	47=122.5 H.P.	76=1,900 H		
103	DEWSBURY	Dewsbury Corporation ..	1894	R. H. Campion	230 & 440, tr. 550	Direct ..	1,050	960	360 A.H.lg., 150 KW.tr.	£58,481	834 KW.	31 arc, 32 cbn., 2 mtl.	138=644 H.P.	28=740 H		
104	DISS	Suffolk Electricity Supply Co., Ltd.	1898	Napier Prentice	200	Direct ..	48	23	40 KW.	..	40 KW.	..	5=8 H.P. ..	..		
105	DOLLAR	Electric Supply Corporation, Ltd.	1904	K. A. Scott-Moncrieff*	225	Direct ..	40	17.1	15 KW.	£7,000	64 KW.	26 mtl., 8 Nernst	5=1½ H.P. ..	..		
106	DONCASTER	Doncaster Corporation ..	1900	E. S. Rayner ..	230 & 460 tr. 500	Direct ..	1,200	825	75 KW.	£64,501	988 KW.	8 arc, 44 mtl.	79=362 H.P.	50=1,250 H		
107	DORKING	Dorking Electricity Supply ..	1904	Henry Joseph ..	240	Direct ..	180	163	49 KW.	£38,599	520 KW.	..	53 KW. (inc. htg.)	..		
108	DOVER	Dover Corporation	1895	L. W. Woodman	100 & 200A.C. 500 D.C.	100~, 1-ph. & direct	1,850	691	77 KW.	£187,194	1,568 KW.	65 arc ; inc. & N. = 444 8-C.P.	49=244 H.P.	21=1,100 H		
109	DUBLIN	Dublin Corporation	1892	Mark Ruddle ..	lg. 200, pr. 346	50~, 1-ph. & 3-ph.	6,000	3,490	..	£526,000	4,944 KW.	557 arc, 125 mtl.	364=1,670 H.P.	..		
110	DUDLEY	Dudley Corporation	1899	Charles E. Savage	230 &420 tr. 500	Direct ..	1,600	1,575	..	£83,000	985 KW.	56 arc, 222 cbn., 30 mtl.	110=753 H.P.	See other Table		
111	DULVERTON	Dulverton Electric Lighting Co., Ltd.	1904	J. P. Davis (Res.)	230	Direct ..	60	30	50 KW.	£3,780	62 KW.	35 cbn. ..	8=12 H.P.	..		
112	DUMBARTON	Electric Supply Corporation, Ltd.	1906	K. A. Scott-Moncrieff*	240 & 480 tr. 500	Direct ..	940	763	50 KW.	£43,480	191 KW.	..	60=685 H.P.	60=1,620 H		
113	DUMFRIES	Dumfries Electric Supply Co., Ltd.	1906	Talfourd Ely, Manager*	230	Direct ..	200	52	125 KW.	£31,536	90 KW.	..	35=50 H.P.	..		
114	DUNDEE	Dundee Corporation	1893	H. Richardson..	200 & 400 tr. 550	Direct ..	3,010	2,800	70 KW.	£179,135	3,231 KW.	83 arc ..	404=1,708 KW.	144=3,580 H		
	[illegible]	1894	J. Douglas Knight	102 & 204	40~, 1-ph.	1,770	1,132	94 KW.	£205,353	..	72 arc, 804 mtl.	57=196 H.P.	..			
	[illegible]	1882 &	J. K. Brydges ..	200	50~, 1-ph.	1,950	1,098	..	£188,494	5,032 KW.	97 arc, 15 mtl.	117=311 H.P.	..			

353=760 H.P.	80=450 H.P.	1,860 KW.	15.5	Lg. 5 to 4*; pb. lg. arc £21 13s 4d & £15; pr. 1(rest'd. hrs. 3½); tr. 2 to 1½	Max. demand, flat, sl. sc., 2 rate & spl.	1,298,576	Lighting and traction. *Also £7 per KW. m.d. & 2d. per unit. Data to Mar. 31, 1910	68	264	MANSBRIDGE	..
1=67 H.P. ..	..	117 KW. ..	..	Lg. 7½ w. dis. (=6 to 3½); pb. lg. contract	Flat rate with discounts	68,479	5 miles overhead mains to Carlow. Water power; steam plant at C. as stand-by	69	265	WESTMINSTER	..
156=1,078 H.P.	1=—3,214 H.P.	*	*	Lg. 6 & 8, or 8; pb. lg. 3 & 3½; pr. 3 & 1 (htg. 1); tr. 2 to 1½	Max. demand, flat rate and sliding scale	3,022,000	Sup. w. formerly obtained at Acton, owing to gen. adoption of mtl. fil. lamps. Data to Mar. 31, 1909	36	266	WESTMINSTER & ST. JAMES	
1,269 KW. (inc. htg.) 915=10,017 H.P.	See other Table	13,033 KW.	11	Lg. 4; pr. 2½ to 1½	Flat rate, sl. scale & contract	..	*Used as stand-by; Bulk supply from No. o/T. E. S. Co. Cons. engrs. Merz & McLellan. Data to Dec. 31, 1909	37	267	WESTMINSTER, HOLBORN & CITY OF L.	
58=350 H.P.	..	718.5 KW.	49	Lg. 3½ & 1, or 3½ less 10%; pr. 2 to 1, less 10 per cent.; tr. 1.1	Max. demand & flat rate	11,993,271	Lighting and traction station. *Also three-phase supply at 400 v., 50~. Data to March 31, 1910	38	268	WOOLWICH, PLUMSTEAD & ELTHAM	
2,237 H.P. ..	325 KW. ..	3,912 KW.	7.2	Lg. 5 with dis. & spl.; pb. lg. contract; pr. 2½	Flat rate and contract	593,000 (estd.)	*Also stand-by supply=150 H.P. Data to May 15, 1910	39	269	LONDONDERRY ..	..
..	See other Table	..	..	Lg. 6 & 1½, or 3½; pb. lg. 2; pr. 2 to 1; tr. 1½ to 1	Max. demand and flat rate	2,761,933	Lighting and traction. Data to Mar. 31, 1910	40	270	LONG EATON ..	..
192=502 H.P.	52=1,300 H.P.	7,522 KW.	8.25	Pb. lg. 2	Flat rate	1,890,580	Public lighting & traction station (92½% of output for traction.) *Station plant and cables. Data to Mar. 31, '09	41	271	LONG EATON ..	..
1,545=6,770 H.P. (ex. bulk)	See other Table	14,388 KW. ex. tr.	5.02	Lg. 7 & 3½, 8% or 6½; pr. 2 & 2½; tr. 1½	Max.dem.,flat,w.d., 3-rate, cont. & spl.	2,950,437	Lighting and traction. *Also 400 v. A.C., and traction 580 v. D.C. Data to December 31, 1909	42	272	LONGTON ..	..
..	..	420 KW. ..	4	Lg. & pr., 6 & 3½; pb. lg., arc £15, inc. £2 p.a.	Max. demand ..	167,260	Lg. & tr. Lamps free (one p. 30 n.). *50~3-ph. at 6,600 v. to substns. Tr. 500 D.C. †Also 7d. & 1d. m.d. Data to 31/3/10	43	273	LOUGHBOROUGH ..	..
21=136 H.P.	..	546 KW. ..	3	Lg. 6 & 4, or 5½; pb. lg. 2.9; pr. 4 & 1½, or 2½	Max. dem., flat rate, 2-r. & cont.	113,265	District residential, no industries, hence no power load. Data to March 31, 1909	44	274	LOWESTOFT ..	..
506 H.P.	..	567 KW.	..	Lg. 4¼; pb. lg. 3; pr. 1½; htg. 2½	Flat rate	387,287	* F. Barritt Hills, Engineer & Manager	45	275	LUDLOW ..	..
24=96 H.P.	..	300 KW.	14	Lg. 7 & 2, or 4½ to 4; pr. 3 & 1, or 2	Max. demand & flat rate	107,592	7 large motors work occasionally only, from 5 to 150 H.P. Data to Mar. 31, 1910	46	276	LUTON ..	..
37=104 H.P.	..	798 KW.	12.6	Lg. 5 to 3½; pb. lg. arc £15, inc. & N. £4; pr. 2 to 1½	Flat rate & sliding scale	333,305	Data to Dec. 31, 1909	47	277	LYME REGIS ..	..
20=40 H.P.	..	170 KW.	4	Lg. 5; pr. 4, 3 & 2	Flat rate	52,482	*300 KW. being installed. Data to Mar. 31, 1910.. ..	48	278	LYMINGTON ..	..
460 = 2,468 H.P.†	80=2,400 H.P.	11,650 KW. (ex. tr.)	4.7	Lg. 6 & 2 m.d. 4d. & 3d. flat; pb. lg. 1½; pr. 1½ (t. sw. 1); tr. 1.35	Max. dem.,flat, sl. sc., t. sw., cont. w.d.,&spl.	9,000,000	Gas power. Data to Mar. 31, 1909	49	279	LYNTON & LYNMOUTH	
1,201 = 9,785 H.P.	..	18,576 KW.	8.9	Lg. 4½ w.dis. to 3.15; pb. lg. arc £21, £14½ per lp. p.a.; pr. 1½ w. dis.to 1.2	Max. dem., flat rate w. dis., 2-rate, special	7,363,941	Lg. & tr. *8,000 v. 3-ph. 50~ to substations. †Including 189 motors=947 H.P. on hire. Data to Mar. 31, 1910	50	280	MACROOM ..	..
55=150 H.P.	..	2,944 KW.	6	Lg. 7 & 4, or 6; pr. 4 & 1, or 2½; bulk supply 2	Max. demand, flat rate & 2-r. mtr.	840,382	*300 KW. bulk supply to Chislehurst at 2,000 volts D.C. Data to Dec. 31, 1909	51	281	MAIDENHEAD ..	..
16=56 H.P.	..	506 KW. ..	3	Lg. 5½; pb. lg. 2½; pr. 3 ..	Flat rate w. dis. ..	106,236	54 KW. bulk supply to Chislehurst at 2,000 volts D.C. Data to Dec. 31, 1909	52	282	MAIDSTONE ..	..
2=1¼ H.P. ..	..	70 KW. ..	..	Lg. 7 w. dis.; pb. lg. contract ..	Flat rate	..	Data to May 15, 1909	53	283	MALTON & NORTON	
55 H.P. ..	..	..	..	Lg. 5; pb. lg. contract; pr. 1½ ..	Flat rate with discount	..	Part gas power. Data to Dec. 31, 1909	54	284	MALVERN ..	..
12	..	120 KW. ..	31.5	Lg. 6; pr. 4	Flat rate	25,000	Data to May 15, 1910	55	285	MANCHESTER ..	..
241=710¾ H.P.	46=3,460 H.P.	5,297 KW.	12	Lg. 3½; pb. lg. 1½; pr. 1¾ & 1; tr. 1½	Lg., flat rate; pr., max. dem. w. dis.	8,249,387	Suction gas power; overhead mains. Data to Sept., 1909	56	286	MANSFIELD ..	..
157=1,008 H.P.	..	..	..	Lg. 7 & 2, or 5; pb. lg. 3; pr. 2 to ¾	Max. demand, flat rate & sl. scale	958,077	Lighting and traction. Data to Mar. 31, 1910	57	287	MARDY (CLAM.) ..	
150=933 H.P.	40=1,000 H.P.	1,748 KW.	9.7	Lg. 5, or 6 & 3; pb. lg. 3; pr. 1 to ¾, or 3 & 1, or 3 to 1½; tr. av. 1.37	Max. demand, flat rate, & sl. scale	1,529,517	Data to Dec. 31, 1909	58	288	MARGATE & BROADSTAIRS & S. PETERS	
314=2,506 H.P.	See other Table	5,917 KW.	..	Lg. 3¾, 3½, 2½; pb. lg. arc £11½ & £13½, inc. £1½; pr. 1½, 1 & ½; tr. 1	Flat rate & sliding scale	3,911,838	Lighting and traction. Data to Mar. 31, 1909 (part 1910). *4,000 KW. being installed	59	289	MARKET DRAYTON ..	
35=187 H.P.	..	527 KW.	8	Lg. 6 (dis. to 8½%) pb. lg. arc £14, inc. £2; pr. 3 to 2¼* w.dis.	Flat rate with discounts & special	327,857 (approx.)	Lighting and traction. Data to Mar. 31, 1910	60	290	MELROSE ..	..
39=123½ H.P.	..	1,004 KW.	11.1	Lg. 6, 7 & 3, 2; pb. lg. arc £20 p.a.; pr. 2½, 1½, 1½	Max. dem., flat & sl. scale with dis., etc.	816,030	*Corp. waterworks, 50 H.P., supplied at 1.25d. per unit average. Data to Mar. 31, 1910	61	291	MELTON MOWBRAY ..	
121=1,443 H.P.	20=500 H.P.	2,112 KW.	14	Lg. 7 & 4, or 6; pb. lg. contract; pr. 4 & 1, or 2½; tr. 1½	Max. demand, flat rate & contract	2,729,489	Max. load in September; load through season heavier than in winter. Data to Mar. 31, 1910	62	292	MERTHYR TYDFIL ..	
82=211 B.H.P.	..	1,945 KW.	10	Lg. 6 on 200 v., 7 on 100 v., with spcl. discounts; pr. 3½ to 1½	Flat rate with discounts, & contract	621,448	Lighting and traction. *Pr., 80% of total on restricted-hour system. Data to Mar. 31, 1910	63	293	MEVAGISSEY ..	..
13=43 H.P.	..	237 KW.	..	Lg. 4; pb. lg. 2; pr. 2	Flat rate	100,000 est.	Lighting and traction. *Also A.C. at 3,000 v. Data to Dec. 31, 1909	64	294	MEXBOROUGH ..	..
95=395 H.P.	..	1,118 KW.	6.9	Lg. 7 & 1½, or 4½; pb. lg. arc £25, inc. £2½ p.a.*; pr. 1½	Max. demand and flat rate	688,852	*Also destructor, £7,000. Energy obtained from refuse almost entirely. Data to May 15, 1909	65	295	MIDDLESBROUGH ..	
502=3,329 H.P.	..	7,890 KW.	10.5	Lg. 7 & 2, or 3½; pb. lg. arc £14, flame £20, p.a.; pr. 4 & 1, or 1½	Max. dem., flat rate, sl. scl., 2-rate mtr.	4,548,898	*Two tant. 25 C.P. each, or two Osram 25 C.P., or one cbn., 25 C.P. Data to Mar. 31, 1910.	66	296	MIDDLETON ..	..
353=760 H.P.	30=450 H.P.	1,860 KW.	15.5	Lg. 5 to 4*; pb. lg. are £21 13s 4d & £15; pr. 1(rest'd. hrs. 3½); tr. 2 to 1½	Max. demand, flat, sl. sc., 2 rate & spl.	1,298,576	*Tr.dept. sup. 3-ph. 6600 v., 50~ & 400 v., D.C. at 2d. p.u. †Inc. £2 14s. & £4 1s. p.a. Data 31/3/10	67	297	MILFORD-ON-SEA ..	
1=67 H.P. ..	..	117 KW. ..	..	Lg. 7½ w. dis. (=6 to 3½); pb. lg. contract	Flat rate with discounts	68,479	Lighting and traction. *Also £7 per KW. m.d. & 2d. per unit. Data to Mar. 31, 1910	68	298	MINEHEAD ..	..
31=195 H.P.	..	365 KW. ..	16	Lg. 5; pr. 2½, w. discounts ..	Flat rate	92,514	5 miles overhead mains to Carlow. Water power; steam plant at C. as stand-by	69	299	MIRFIELD ..	..
68 KW. inc. htg.	..	422 KW. ..	3.7	Lg. 7 & 4, or 6; pr. 4 & 1½, or 2½	Max. demand & flat rate	97,250	*Leased from the Corporation. Data to Mar. 25, 1910 ..	70	300	MONMOUTH ..	..
..	..	..	..	Lg. 6; pb. lg. inc. £2 p.a. ..	Flat rate	..	Data to Dec. 31, 1909	71	301	MONTROSE ..	..
65=230⅔ H.P.	..	925 KW.	3.9	Lg. 5½ to 4½; pb lg. arc £35½, N. £3 3s. p.a.; pr. 3	Sliding scale with discounts	509,787	Water power. Data to April 13, 1910	72	302	MORECAMBE ..	..
49=121 H.P.	40=1,940 H.P.	2,222 KW. (ex. tr.)	..	Lg. 5½, 4 & 2; pb. lg. 3; pr. 2; tr. 1.6, 1.1, & 0.75	Max. demand, flat rate & contract	1,730,809 (estd.)	*Res. Eng. & Manager, J. Eustace. Data to Dec. 31, 1909	73	303	MORLEY ..	..
2=6 H.P.	..	..	..	Lg. 6; pr. 2½	Flat rate	26,789	Lighting and traction. Lighting A.C., Tramway Co. supplied with D.C. Data to Mar. 31, 1910	74	304	MORPETH ..	..
50=250 H.P.	..	894 KW. ..	5.6	Lg. 6; pb. lg. contract; pr. 4 & 1½, or 2	Flat rate, contract & max. demand	233,038	Data to Dec. 31, 1909	75	305	MOTHERWELL ..	..
128=530 H.P.	36=1,230 H.P.	3,497 KW.	..	Lg. 3½; pb. lg. inc. £5,006 p.a.; pr. 1½ & 1; tr. 0.89 p.n. + £982 p.a.	Flat rate w. dis. & contract	1,869,073	Lighting and traction. Data to Mar. 23, 1910	76	306	MUSSELBURGH ..	
158=730 H.P.	30=760 H.P.	2,434 KW. (inc. tr.)	14.6	Lg. 6 & 3, or 4, less 10%; pb. lg. arc £12½; pr. 1½, 1¼ & 1; tr. 1¼	Max. demand & flat rate with dis.	1,085,305	Lighting and traction. Data to Mar. 31, 1910	77	307	NELSON ..	..
5=17 H.P.	..	112 KW. ..	..	Lg. 6; pr. 2½ & 1½	Flat rate	..	*Horace Boot, cons. eng. Pb. lg. cont. obtained as from Dec. 31, 1910. Diesel oil-engine plant. Data to Dec. 31, '09	78	308	NEWBURY ..	..
..	..	504 KW. ..	5	Lg. 8 & 4, or 7; pr. 4	Max. demand and flat rate	121,974	*Bulk supply from Bromley at 2,000 v. Data to Dec. 31, 1909	79	309	NEWCASTLE-EMLYN & DISTRICT	
67=366 H.P.	..	1,482.6 KW.	..	Lg. 5 (shops 4); pr. 2 to 1⅜ ..	Flat rate with discounts	809,697	Data to Dec. 31, 1909	80	310	NEWCASTLE-ON-TYNE	..
1=2 H.P. ..	..	64 KW. ..	..	Lg. 6; pr. 5 & 1½	Flat rate	19,278	Suction gas plant	81	311	NEWCASTLE-ON-TYNE	..
..	..	..	..	Lg. 5; pr. 3	Flat rate	..	.. ..	82	312	NEWCASTLE-ON-TYNE AND TYNESIDE	
88=488 H.P.	600 H.P. ..	970 KW.	25.2	Lg. 4; pb. lg. 2; pr. 2, 1, ¾ & ½* tr. 1.5 to 1.3	Flat rate & sliding scale	669,557	Lighting and traction. *102 H.P. under agreement at ¾d. per unit. Data to Mar. 31, 1910	83	313	NEWCASTLE-UNDER-LYME	
1,900 H.P. ..	..	2,948 KW.	..	Lg. 4	Flat rate & sliding scale	2,052,375	Lg. & tr. *Traction 550 v. D.C. †Part of supply bulk from Clyde Valley Elec. Power Co. Data to Dec. 31, 1909	84	314	NEWMARKET AND EXNING	
50=133 KW.	36=816 H.P.	2,038 KW.	12.8	Lg. 5 to 3½; pb. lg. 2½ & 1½; pr. 4 to 1; bulk, 1½ to 1; tr. 1½	Flat rate with discounts	1,372,340	Lighting and traction. Data to Mar. 31, 1909 (part 1910)	85	315	NEWPORT & COWES	
171=417 H.P.	24=672 H.P.	1,826 KW.	2.2	Lg. 6 & 2½, or 4½; pr. 3 & 1, or 2½; tr. 2 to 1½	Max. demand and flat rate	714,320	Lighting and traction. Motor-gen. 125 K.V.A., 50~, 3-ph., for transmission. Data to Mar. 31, 1910	86	316	NEWPORT (MON.) ..	
15=94 H.P.	..	676.5 KW.	..	Lg. 5; pb. lg. 2; pr. 3	Flat rate	222,922 (1907)	Data to Mar. 31, 1910	87	317	NEWQUAY ..	..
316=2,228½ H.P.	70=1,330 H.P.	4,683 KW.	4.5	Lg. 5, 4 & 3; pb. lg. arc £15 p.a.; pr. 2 & 1½	Flat rate determined by max. demand	3,595,303	Lighting and traction. *6,000 v. 50~ 3-ph. trans. †Lg. £155,544; tr. £173,486. Data to Dec. 31, 1909	88	318	NEWTON ABBOT ..	
601=5,823½ H.P.	..	7,703 KW.	11.7	Lg. 6, 3 & 1, or 4½; pb. lg. £800 p.a.; pr. 1½ to 1	Max. demand and flat rate	6,038,825	Data to Mar. 31, 1910	89	319	NORTHALLERTON ..	
6=20 H.P. ..	..	60 KW.	20	Lg. 6; pr. 4	Flat rate	37,000	Suction gas plant, and overhead mains. Data to June, 1909	90	320	NORTHAMPTON ..	
52=195 H.P.	..	980 KW.	6.6	Lg. 6 & 3, or 4; pb. lg. 2½; pr. 3 to 1	Max. dem., flat & sl. scale with dis.	636,275	Data to Mar. 31, 1910	91	321	NORTHWICH ..	..
22=31 KW. ..	..	411 KW.	4	Lg. 7 & 4, or 6*; pb. lg. arc £17 p.a.; pr. 4 & 1½, or 2½	Max. demand and flat rate with dis	94,967	*Slot meter 7d. per unit, inc. meter rent. Data to Dec. 31, 1909	92	322	NORWICH ..	..
327=1,070 H.P.	200=5,000 H.P.	12,547 KW.	5	Lg. 7 & 1½, or 4 (bsmnt 2½); pr. (t. sw.) 3 & 1, or 2½; tr. 2 to 1½	Max. dem., flat, cont w. dis., time sw.	7,185,656	Lg. & tr. *Tr. 550 v. †Pb. lg. arc £15; inc. £3 8s 6d. £5 16s 6d. and £2 18s. 4d. p.a. Htg., 1½d. Data to Mar. 31, 1910	93	323	NOTTINGHAM ..	..
29=74½ H.P.	..	200 KW. ..	21.2	Lg. 4½ less 10%; pb. lg. 3; pr. 3; htg. 1½	Flat rate	73,513	*Resident Engineer, J. A. Gow-Russell. Data to Dec. 31, 1909	94	324	NUNEATON ..	..
210=2,098 H.P.	32=800 H.P.	3,822 KW.	67	Lg. 4 & 1½, or 3½; pb. g. arc £15 p.a.; pr. 1½ to 1*; tr. 1	Flat rate, max. demand & sl. scale	1,834,676	Lighting and traction. *Also £4 per KW. p.a. and ½d. per unit. Data to Mar. 31, 1910	95	325	OBAN ..	..
59=588 H.P.	12=600 H.P.	1,295 KW.	26.2	Lg. 7 & 2, or 4*; pb. lg. arc £21, £10†; pr. 2½ to 1½§; tr. 2 to 1½	Max. demand and flat rate w. dis.	904,999	Lg. & tr. *Prept. meters, 6d. †Mtl. £4 & £3 3s. §Also £5 per KW. & 1½ p.u. Data to Mar. 31, 1910	96	326	OCMORE VALLEY ..	
29=193 H.P.	..	782 KW.	3.2	Lg. 7 & 3, or 6; pb. lg. £559 p.a.; pr. 4 & 1½, or 2½	Max. demand and flat rate	376,578	Data to Dec. 31, 1909	97	327	OLDHAM ..	..
113=413 H.P.	32=1,120 H.P.	1,074 KW.	9.4	Lg. 4½; pb. lg. 3; pr. 2; tr. 1½	Flat rate and contract	660,812	Lighting and traction, with destructor. Data to Mar. 31, 1908	98	328	OSWESTRY ..	..
..	..	18 KW.	..	Lg. 4, minimum £1 p.a.; pb. lg. 3; pr. 2½ & 2, min. £2 p.a.	Flat rate	4,810	Data to May 15, 1910	100	329	OULTON BROAD	
180=2,850 H.P.	98=2,000 H.P.	8,000 KW.	6.6	Lg. 6 to 2½; pb. lg. inc. 2; pr. 3 to 1; tr. 1½*	Max. demand and sliding scale*	4,500,000	Lg. & tr. *Special max. demand rates for lg. and pr.; pb. lg., are £22 (inc. £10). Data for 1909	101	330	OXFORD ..	..
47=122.5 H.P.	76=1,900 H.P.	2,495 KW.	3.5	Lg. 4*; pb. lg. arc £22½, inc. £3§; pr. 1½; tr. 3 to 1.4	Flat, sl. sc., 2-rate, cont., t. sw., spl.	1,651,614	Lighting and traction. *By 2-rate mtr., 4 & 1½d. Data to Mar. 31, 1910	102	331	PAIGNTON ..	..
138=644 H.P.	28=740 H.P.	1,950 KW.	8.3	Lg. 5½ & 3, or 4; pb.lg. 5½ & 3; pr. 2½ & 1 (t. sw. 1); tr. 1.6, 1.5 & 1.4	Max. demand and flat rate	1,209,575	Traction supply to Yorks. (W.D.) Elec. Trys., and to Dewsbury & Ossett Trys. Data to Mar. 31, 1910	103	332	PAISLEY ..	..
5=8 H.P. ..	..	45 KW. ..	..	Lg. 8 & 6; pr. 6 to 3	Max. demand and flat rate	..	Gas power	104	333	PARTICK ..	..
5=1½ H.P. ..	..	63 KW.	8.9	Lg. 6; pb. lg. 3; pr. 3; hg. 1½	Flat rate & sliding scale	15,874	Overhead mains, bare copper. *Resident engineer, J. B. Mitchell. Data to Dec. 31, 1909	105	334	PEMBERTON ..	..
79=362 H.P.	50=1,250 H.P.	2,237 KW.	5	Lg. 5, 4½ & 3; pb. lg. £230 p.a.; pr. 2 to 1; tr. 1½	Max. demand and flat rate	1,040,665	Lighting and traction. Data to Mar. 31, 1910	106	335	PEMBROKE (DUBLIN) ..	
53 KW. (inc. htg.)	..	573 KW.	9.1	Lg. 7 & 4, or 6; pr. 2½	Max. demand & flat rate	131,692	Data to Dec. 31, 1909	107	336	PENARTH ..	..
49=244 H.P.	21=1,100 H.P.	2,963 KW.	..	Lg. 7 & 3, or 6½ w. dis.*; pr. 2½; tr. 3½	Max. demand & flat rate w. discount	1,099,279	Lighting and traction. *Pb. lg. arc £30 p.a., or 2¾d. p.u., inc. (12 C.P.) £1 12s. p.a. Data to Mar. 31, 1910	108	337	PENRITH ..	..
364=1,670 H.P.	..	6,788 KW.	20	Lg. 5½ to 3; pb. lg. arc £22, inc. £3¾ p.a.; pr. 1½	Flat rate with discounts	3,875,675	Data to Dec. 1908	109	338	PERTH ..	..
110=753 H.P.	See other Table	1,687 KW. (ex. tr.)	11	Lg. 6 & 1½, or 4; pb.lg. 2 (arc £30 p.a.); pr. 6 & 1; tr. 2 to 1, av. 1.3	2-rate meter, flat rate, & prept.	2,022,207	Lighting and traction. Data to Mar. 31, 1908	110	339	PETERBOROUGH ..	
8=12 H.P.	..	72 KW.	100	Lg. 6; pb. lg. £35; pr. 4 to 1 ..	Flat rate & sliding scale	19,200	Data to Sept. 30, 1909..	111	340	PLYMOUTH ..	..
69=685 H.P.	60=1,620 H.P.	800 KW. (ex. tr.)	23.5	Lg. 4½; pr. spl.; hg. 1½; tr. sl. scale	Max. demand, flat rate & sl. scale.	1,449,193	Lighting and traction station. *Resident engineer, A. R. Howden. Data to Dec. 31, 1909	112	341	PONTYPOOL ..	..
35=50 H.P.	..	137 KW.	44.2	Lg. 7; pr. 3	Flat rate with discounts	26,934	*W. H. Scott, resident. Data to Dec. 31, 1909	113	342	PONTYPRIDD ..	..
404=1,708 KW.	144=3,580 H.P.	8,549 KW.	24	Lg. 3½ to 2; pb. lg. arc £15, £12, £8 p.a.; pr. 2½ max.; tr. 1½	Flat rate with dis.; spl. m.d. for pr.	4,719,085	Lighting and traction. Data to April 30, 1908	114	343	PORTPATRICK ..	
57=196 H.P.	..	4,197 KW.	8.4	Lg. 4½ (arc 4), or 7 & 2; pb. lg. arc £18 14s., inc. £2 9/1.5*; pr. 1½	Flat rate & max. demand	1,448,770	*Osram lamps supplied free for pb. lg. Decrease in units sold due to mtl. lamps. Data to Mar. 31, 1910	115			
117=311 H.P.	..	3,358 KW.	5.7	Lg. 5½, hotels 7 & 2½ (arc 4½);	Flat rate, max. de-	1,349,718	*Purchased from Company in 1900. †Also double tariff.	116			

Special Supplement to the "ELECTRICAL REVIEW," June 24th, 1910.

"ELECTRICAL REVIEW" L

	Place.	Supply Authority.	Year of opening.	Engineer.	Pressure of supply, volts.	Frequency and phase.	Total capacity of plant in KW.	Max. load recorded in KW.	Storage battery, max. discharge.	Total capital expended.	Private lighting.	Public lighting.	No. and B.H.P. of private motors.	No. and of trac moto
1	ABERDEEN	Aberdeen Corporation	1894	J. Alex. Bell	230,230 & 440 D.C., tr. 500*	Direct & 50~ 1-ph. & 3-ph.	4,610	3,218	420 KW.	£363,849	5,138 KW.	312 arc, 117 mtl.	707=4,012 H.P.	160=4,0
2	ABERTILLERY	Abertillery Urban District Council	1910	Dan Lloyd	250 & 500	Direct	132	44		£10,000	35 KW.	250 mtl.	4=18 H.P.	
3	ABERYSTWYTH	Chiswick Electricity Supply Corporation, Ltd.	1895	E. P. Perkins	220 & 440	Direct	420	220	74 KW.		480.5 KW.	29 arc, 8 mtl.	25 H.P.	
4	ACCRINGTON	Accrington Corporation	1900	Harold Gray	230 & 460 tr. 550	Direct	1,888	1,228	160 KW.	£71,644	980 KW.	18 arc, 60 mtl.	241=999 KW	46=1,7
5	ACTON	Acton Urban District Council*	1905	J. Martin Blair	230 & 460	Direct	920* (mtr.-gen.)	332	1,000 A.H.	£66,647	919 KW.	64 arc, 128 cbn.	67=229 H.P.	
6	ALDERLEY EDGE AND WILMSLOW	Alderley & Wilmslow Electric Supply Ltd.	1899	Edgar Hesketh	210 & 420	Direct	242	129.3	38.6 KW.	£46,804	579 KW.	1 cbn., 243 N.	16=51½ H.P.	
7	ALDERSHOT TOWN	Aldershot Urban District Council	1902	F. Garside	210 & 420	Direct	440	199	150 A.	£27,975	428 KW.	19 arc, 44 mtl., 20 N.	31=77 H.P.	
8	ALLOA	Alloa Corporation	1902	J. W. Napier	220 & 440	Direct		98·5	270 A.	£9,500	265 KW.	20 arc	16=24 H.P.	
9	ALNWICK	Northern Counties Electricity Supply Co., Ltd.	1902	J.W. Summerside (Res.)*	230 & 460	Direct	150	130			288 KW.		105 KW. pr. & htg.	
10	ALTRINCHAM & DIST.	Altrincham Electric Supply Ltd.	1895	Geo. H. Fawcus	100	80~, 1-ph.	660	427		£67,214	1,780 KW.		20=84 H.P.	
11	ARBROATH	Arbroath Electric Light and Power Co., Ltd.	1908	J. C. Christie	250 & 500	Direct	450	319	208 KW.	£31,653	119 KW.	20 fl. arc, 40 mtl.	47=606 H.P.	
12	ASCOT & DISTRICT	Ascot District Gas and Electricity Company	1907	A. E. Brooks	220 & 440	Direct	100	53.5	57 KW.	£24,231	283 KW.		5=11.9 KW.	
13	ASHTON-U-LYNE	Ashton Corporation	1899	N. Appelbee	240 & 480 tr. 500	Direct	1,760	1,391		£85,525	1,083 KW.	98 arc, 123 cbn., 164 mtl.	164=851 H.P.	180=3,000
14	ASTON MANOR AND ERDINGTON	Aston Manor Corporation	1903	Robert Foster	230 & 400 tr. 500-550	50~, 3-ph.	4,765	2,400 lg., 350 tr.		£170,335	1,082.3 KW.	19 arc, 34 cbn., 6 mtl.	4713.5 H.P.	35 (averag 2,000 H
15	ATHERTON	Atherton Urban Dist. Council*	1903	Chas. T. Astbury	240 A.C., 500 D.C.	50~, 2-ph. & direct	300*	80		£10,000	101 KW.	12 arc	20=173 H.P.	
16	AYR	Ayr Corporation	1896	Roland Marshall	100 & 200A.C. 250&500D.C.*	60~, 1-ph., & direct	1,325	854	100 KW.	£100,616	1,850 KW.	11 arc, 188 cbn., 20 mtl., 6 N.	1100=381 H.P.	32=800
17	BANBURY	Banbury & District Electric Supply Co., Ltd.	1903	Arthur J. Wray	230 & 460	Direct	662	250	100 KW.		331 KW.		40=250 H.P.	
18	BANGOR (WALES)	Bangor Corporation	1900	Price F. White	200 & 400	Direct	440	220	84 KW.	£30,116	424 KW.		23=113 H.P.	
19	BARKING	Barking Urban District Council	1899	H. L. Howard	230 & 460	Direct	1,010	478		£60,000	461 KW.	19 arc, 494 inc., 54 Nernst	64=493 H.P.	24=600
20	BARNES, MORTLAKE & EAST SHEEN	Barnes Urban District Council	1901	C. S. Davidson	210 & 420	Direct	970	505	300 KW.	£65,201	1,440 KW.	231 mtl., 236 N.	55=366 KW.	
21	BARNSLEY	Barnsley Corporation	1900	E. A. Barker	230 & 460, tr. 500	Direct	1,325	822	150 KW.	£77,441	1,685 KW.	110 arc, 141 inc.	120	
22	BARNSTAPLE	Barnstaple Corporation	1903	J. W. Hadfield	230 & 460	Direct	375	195	41.4 KW.	£31,600	525 KW.	30 arc, 78 cbn. 93 mtl.	26=70 H.P.	
23	BARROW-IN-FURNESS	Barrow-in-Furness Corporation	1899	H. R. Burnett	220 & 440 tr. 500	Direct	1,525	925	300 KW.	£114,570	1,661 KW.	78 arc, 106 cbn., 43 mtl.	138=782 KW.	32=752
24	BATH	Bath Corporation	1890	Francis Teague	100 A.C., 220 D.C.	100~, 1-ph., & direct	1,900	1,078	350 KW.	£164,418	1,842 KW.	194 arc, 3 cbn., 6 mtl.	141=476 H.P.	
25	BATLEY	Batley Corporation	1903	S. D. Jones	220 & 440	Direct	850	580	90 KW.	£43,667	523 KW.	25 arc, 50 inc.	72=239.4 KW.	32=1,178
26	BECKENHAM	Beckenham Urban District Council	1900	J. E. Tapper	200 & 400 tr. 500 D.C.	50~, 1-ph.	1,300	706	500 KW.	£129,000	1,784 KW.	17 arc, 34 mtl.	23=56 H.P.	
27	BEDFORD	Bedford Corporation	1894	R. W. L. Phillips	105 & 210	60~, 1-ph.	860	560		£94,204	1,767 KW.	17 arc, 616 inc.	137 H.P.	
28	BELFAST	Belfast Corporation	1895	Thos. W. Bloxam	220 & 440 tr. 550	Direct	8,800	6,915	100 A.	£326,432	6,174 KW.	8 arc	5,835 H.P.	464=13,9 H.P.
29	BERWICK-UPON-TWEED	Urban Electric Supply Co., Ltd.	1903		240 & 480	Direct	180	160	96 KW.	£31,022	313 KW.	17 arc, 17 mtl., 8 Nernst	60=300 H.P.	
30	BEXHILL-ON-SEA	Bexhill Corporation	1900	W. T. Le Feuvre	220 & 440	Direct	1,150	442	23 KW. for 10 hrs.	£61,000	1,177 KW.	53 arc, 374 cbn., 220 mtl.	30=82 H.P.	
31	BEXLEY	Bexley Urban District Council	1903	C. Mittelhausen	200 & 400 A.C., tr. 500 D.C.	50~, 1-ph.	450	302	37 KW.	£16,440*	399 KW.	241 inc. & mtl., 54 N.	14=28.3 H.P.	32=800
32	BIRKDALE	Birkdale District Electric Supply Co., Ltd.	1902	H. Bentham	230 & 460 tr. 550	Direct	390	342		£39,000	911 KW.	8 arc, 356 mtl.	6=19½ H.P.	6=105 H.
33	BIRKENHEAD	Birkenhead Corporation	1896	W. Wyld	230 & 460	Direct	1,750	1,042	208 KW.	£160,000 approx.	3,050 KW.	58 arc	146=1,001 H.P.	
34	BIRMINGHAM	Birmingham Corporation	1891	R. A. Chattock	220 & 440* tr. 550	Direct*	20,540	15,260	1,150 KW.	£1,393,861	11,180 KW.		2,398=20,085 H.P.	See other Tal
35	BLACKBURN	Blackburn Corporation	1895	P. P. Wheel-wright	110, 220 A.C., 230&440D.C.*	50~, 1-ph., & direct	5,318	2,972	550 KW.	£275,594	3,254 KW. inc. hg.	208 arc, 470 cbn., 8 mtl.	629 = 2,712½ H.P.†	202=4,655
36	BLACKPOOL	Blackpool Corporation	1893	Charles Furness	200 A.C., 500 D.C.	83~, 1-ph., & direct	4,450	2,584	175 KW.	£301,000	*	279 arc, 464 cbn., 362 N.	156=1,078 H.P.	122=2,214
37	BLYTH & COWPEN, & BEDLINGTONSHIRE	Northern Counties Electricity Supply Co., Ltd.	1902	C. W. Fairweather	230 & 460	Direct	1,000*	675			622 KW.	2 KW.	1,269 KW. (inc. hg.)	
38	BOLTON	Bolton Corporation	1894	J. G. Lovely (Res) A. A. Day	100&200A.C.* 230 & 460D.C.	83~, 1-ph.,* & direct	7,600			£348,285	5,564 KW.		915=10,017 H.P.	See other Tal
39	BO'NESS	National Electric Construction Co., Ltd. (for the Corporation)	1905	H. G. Young	230 & 460	Direct	500*	292	36.8 KW.	£35,000	452.4 KW.	33 arc, 87 cbn., 72 mtl.	58=350 H.P.	
40	BOOTLE	Bootle Corporation	1899	T. Dawson Clothier	220 & 440 tr. 500	Direct	2,050	1,260	150 KW.	£114,628	1,541 KW.	174 arc; inc. = 680 8-C.P.	2,237 H.P.	325 KW.
41	BOURNEMOUTH	Bournemouth Corporation	1902	I. Bulfin	550	Direct	1,200	1,000		£75,000*		132 arc		See other Tab
42	BOURNEMOUTH, POOLE AND CHRISTCHURCH	Bournemouth & Poole Electric Supply Co., Ltd.	1889	E. Ll. Ingram	100&200A.C.* 250 & 500D.C.	100~, 1-ph., & direct	4,400	2,281	355 KW.	£443,200	6,694 KW.	129 mtl.	192=502 H.P.	52=1,300
43	BRADFORD	Bradford Corporation	1889	Thomas Roles	230&460 D.C., 230 &400 A.C.	Direct, & 50 ~, 3-ph.*	8,180 D.C.	7,922	230 KW. lg. 250 KW. tr.	£765,300 approx.	6,406 KW. inc. bulk	69 arc, 12 cbn.	1,545=6,770 H.P. (ex. bulk)	See other Tab
44	BRAY	Bray Urban District Council	1892	W. J. U. Sowter	100 & 200	60~, 1-ph.	320	130		£17,000	383 KW.	33 arc, 200 cbn., 50 mtl.		
45	BRECHIN	North of Scotland Electric Light & Power Co., Ltd.	1901	Ernest Ames (res.)*	240 & 480	Direct	282	102.8		£34,074	404 KW.	251 cbn., 5 N.	21=136 H.P.	
46	BRIDGEND & DIST.	Bridgend Urban District Council	1908	W. Welbury (pro. tem.)	500, 440, 220 A.C.	60~, 2-ph.	470	210		£15,600	190 KW.	368 mtl.	506 H.P.	
47	BRIDGWATER	Bridgwater & District Electric Supply & Traction Co., Ltd.	1904	Harold Walker	230 & 460	Direct	200	103	49 KW.	£24,677	210 KW.	15 arc, 184 inc.	24=96 H.P.	
48	BRIDLINGTON	Bridlington Corporation	1905	Arthur J. Beckett	220 & 440	Direct	440*	426	480 A.H.	£38,700	628 KW.	52 arc, 450 mtl.	87=104 H.P.	
49	BRIGHOUSE	Brighouse Corporation	1898	A. Aspinall	110	Direct	70	55	22 KW.	£4,674	134 KW.		20=40 H.P.	
50	BRIGHTON	Brighton Corporation	1891	A. Wright (Cons.) J. Christie (Man.)	115, 230, & 460; tr. 550	Direct*	7,200	5,400	400 A.H.lg. 1200A.H.tr.	£780,645	9,300 KW.	372 arc, 543 cbn., 3,019 mtl.	460 = 2,468 H.P.†	80=2,400 H
51	BRISTOL	Bristol Corporation	1893	H. Faraday Proctor	105 & 210A.C. 250 & 500D.C.	93~, 1-ph.* & direct	12,050	5,729	70 KW.	£775,707	6,980 KW.	693 arc, 9 cbn.	1,201 = 9,785 H.P.	
52	BROMLEY (KENT)	Bromley (Kent) Electric Light & Power Co., Ltd.	1898	R. R. Barker	210	Direct	1,620	657	68 KW.	£131,699	2,440 KW.	3 mtl.	55=150 H.P.	
53	BROUGHTY FERRY	Broughty Ferry Corporation	1902	J. L. Turnbull	230 & 460	Direct	150	90	250 KW.	£19,461	445 KW.	12 arc, 36 cbn., 4 mtl.	16=56 H.P.	
54	BUCKINGHAM	Buckingham Electric Light Co.	1889	T. Gillies (Man.)	230	Direct	70	40			About 66KW.	90 mtl.	2=1½ H.P.	
55	BUNCRANA	Buncrana Electric Supply Co.	1905	John K. Swan	235 & 470	Direct	125					5 arc, 30 cbn.	55 H.P.	
56	BURGESS HILL	Burgess Hill & District Electric Supply Co., Ltd.	1906	W. Simms	230	Direct	64	50	32 KW.	£5,500	100 KW.		12	
57	BURNLEY	Burnley Corporation	1898	Jas. E. Starkie	110,220 & 440 tr. 500	Direct	2,640	1,772	66 KW. lg. 250 KW.tr.	£112,242	2,187 KW.	3 arc, 12 cbn.	241=710½ H.P.	46=3,460 H.
58	BURSLEM	Burslem Corporation	1905	Ashton Bremner	230 & 440	Direct	1,250	642	70 KW.	£37,850	19,184 KW.	23 arc, 42 cbn.	157=1,009 H.P.	
59	BURTON-ON-TRENT	Burton-on-Trent Corporation	1894	P. J. Pringle	100 & 200A.C. tr. 500 D.C.	75~, 1-ph., & direct	1,710	500 lg. 375 tr.		£83,395	1,045 KW.	1 arc	150=933 H.P.	40=1,000 H.
60	BURY (LANCS.)	Bury Corporation	1896	S. J. Watson	220 & 440 tr. 500	Direct	2,360*	2,035	154 KW.lg. 225 KW.tr.	£117,058	3,219 KW.	36 arc, 21 inc.	314=2,506 H.P.	See other Table
61	BURY ST. EDMUNDS	Bury St. Edmunds Corporation	1900	S. E. Day	200 & 400	Direct	220	193	60 KW.	£30,000	388 KW.	14 arc, 178 cbn., 242 mtl.	35=187 H.P.	
62	BUXTON	Buxton Urban District Council	1900	W. J. Leeming	230 & 460	Direct	794	343		£46,325	30,423 KW.	80 arc	39=193½ H.P.	
63	CAMBORNE, REDRUTH AND ILLOGAN	Urban Electric Supply Co., Ltd.	1902	L. A. Hards	240 & 480* tr. 500	Direct, and 25~, 3-ph.	1,025	924	200 KW.lg. 150 KW. tr.	£120,420	496 KW.	2 arc, 230 cbn.	121=1,443 H.P.	20=500 H.P.
64	CAMBRIDGE	Cambridge Electric Supply Co., Ltd.	1892	B. C. Pierce	200	90~, 1-ph.	2,000	598		£129,408	1,882 KW.	1 arc	82=211 B.H.P.	
65	CAMBUSLANG	Lanark County Council	1905		250	Direct	200	120	53 KW.	£16,291*	163 KW.	20 arc, 6 cbn., 468 mtl., 5 N.	13=43 H.P.	
66	CANTERBURY	Canterbury Corporation	1899	C. A. Blascheck	230 & 440	Direct	900	465	66 KW.	£37,598	765 KW.	12 arc, 69 cbn., 584 mtl.	96=395 H.P.	
			1894	Arthur Ellis	200& 400 A.C. & D.C.	40~, 1-ph.,* & direct	1,560 A.C. 1,800 m.g.	2,766	850 KW.	£268,050	4,946 KW.	617 arc, 227 cbn., 143 mtl.	502=3,329 H.P.	
			1899	Sydney T. Allen	230 & 460	Direct	1,170	805	170 A. lg.	£67,277	1,034 KW.	52 arc, 20 mtl.		

” LIST OF ELECTRICITY SUP

	No. and B.H.P. of private motors.	No. and H.P. of traction motors.	Total connections of all kinds.	Percentage increase during year.	Price charged per unit, pence.	System of charging.	Units sold during last complete year.	Remarks.	
7	707=4,012 H.P.	160=4,000 H.P.	9,088 KW. (ex. tr.)	7.4	Lg. 5½ & 1½; pb. lg. 5½ & 1½; pr. 2½ & 1; tr. 1.127, 2½ (co.)	Max.dem., flat rate, cont. & special	5,170,421	Lg. & tr. stn. Supply extended into two counties. *Also A.C., lg. 230 v., pr. 400 v. Data to July 31, 1909.	1
	4=18 H.P.	..	57 KW. ..	..	Lg. 6 to 3; pb. lg. £2 per 40-watt lamp; pr. 3 to 2	Flat rate, sl. scale, contract & special	..	Supply commenced June, 1910	2
l.	25 H.P. ..	..	501 KW. ..	2	Lg. 6 w. dis. to 25%; pb. lg. arc £18 13s. p.a.; pr. 2 & 2½	Flat rate with dis.	149,580	Data to Dec. 31, 1908	3
60	241=999 KW	46=1,748 H.P.	3,308 KW.	..	Lg. 4 w. dis.; pb. lg. 3; pr. 3 & 1; htg. 1; tr. 1.3	Flat rate with discounts	2,972,612	Lighting & traction. Data to Mar. 31, 1909	4
on.	67=229 H.P.	..	1,110 KW.	..	Lg. 5 (shops 4); pb. lg. 4; pr. 2½ & 1, or 1½; htg. 1	Max. dem., flat, 2-rate mtr., cont., spl.	511,212	*Supply in bulk at 10,000 volts A.C. from Met. Elec. Supply Co. Data to Mar. 31, 1908	5
N.	16=51½ H.P.	..	630 KW. ..	7.7	Lg. 7 & 4, or 6; pb. lg 28/-(¾a.), 38/-(1a.); pr. 4 & 1½, or 2½	Max. demand and flat rate	139,340	Data to Dec. 31, 1909	6
21.,	31=77 H.P.	..	497 KW.	9	Lg. 6 & 4, or 5 (arc 3); pb. lg. £22½ per post p.a.; pr. 3 & 2	Max. demand and flat rate	294,771	Data to Mar. 31, 1909	7
..	16=24 H.P. ..	..	296.4 KW.	..	Lg. 4; pb. lg. 2½; pr. 2	Flat rate	83,951	Bulk supply from British Electric Plant Co.	8
	105 KW. pr. & htg.	..	393 KW.	..	Lg. 5½ & 4; pr. 1½ with discounts	Flat rate & sliding scale	..	*C. W. Fairweather (Mgr.). Cons. engrs. Merz & McLellan. Data to Dec. 31, 1909	9
	20=84 H.P.	..	1,874 KW.	6.4	Lg. 6; pr. 2½ & 1½; htg. 2½ ..	Flat rate, contract and special	436,397	Data to Dec. 31, 1909	10
0	47=606 H.P.	..	628 KW. ..	*	Lg. 5; pr. sl. scale and contract	Flat rate, sliding scale & contract	391,214	*First complete year. Data to Dec. 31, 1909.	11
	5=11.9 KW.	..	245 KW. ..	135.5	Lg. 7 & 5; pr. 2	Flat rate with dis.	60,319	Data to Dec. 31, 1909	12
n.,	164=851 H.P.	180=8,000 H.P.	4,389.5 KW.	5.4	Lg. 3 to 2½ (by cont. 2), 2-rate, 1; pb. lg. 1.19; pr. 1½ to 0.6; tr. 1½ to 1	Sl. scale, 2-rate, con. w. dis., t. switch	2,838,295	Lighting and traction. Energy supplied to four tramway undertakings. Data to Mar. 25, 1910	13
n.,	4713.5 H.P.	35 (average)= 2,000 H.P.	6,452 KW.	14.2	Lg. 3 to 2½, or 6 & 1½ (2-rate); pb. lg. arc £12*; pr. 1½ to ⅞; tr. 1½	Sl. scale w. dis., 2-rate mr., cont.&spl.	4,588,943	Lighting and traction. *Incand. £1 per post per ann. Data to March 31, 1910	14
.	20=178 H.P.	..	200 KW.	..	Lg. 4 to 3 & spl. for mills (ch. 4½); pr. 1½ to ⅝; htg. 2	Flat rate, sl. scale, cont. & special	91,827	*Supply in bulk at 7,000 v. A.C. from South Lancs. Tramways Co., Ltd. Data to Mar. 31, 1909	15
n.,	1100=331 H.P.	32=800 H.P.	2,730 KW.	7	Lg. 4; pb. lg. 2; pr. 2 to 1½; tr. 1.23	Flat rate	1,444,469	Lighting and traction. *Traction 550 v. Data to May 15, 1909	16
	40=250 H.P.	..	546 KW. ..	15	Lg. 7 & 2½ (4½ max. average); pr. 1½	Max. demand and flat rate	152,949	Data to Dec. 31, 1909	17
	23=118 H.P.	..	508 KW. ..	2½	Lg. 5 & 3 (2-rate); pr. 2½ to 1½	Lg. flat rate & 2-rate mtr., pr. sl. sc.	176,077	Data to Mar. 31, 1910	18
c.,	64=493 H.P.	24=600 H.P.	1,476.5 KW.	..	Lg. 4½; pb. lg. 1.99; pr. 3½ to 1; tr. 1½	Flat rate & sliding scale	769,089	Lighting and traction	19
N.	55=366 KW.	..	2,018 KW.	1.6	Lg. 3½ w. dis. to 25%; pb. lg. 1.56; pr. 1½ w. dis. to 83⅓%; hg. 1½	Sliding scale with discounts	925,300	Data to March 31, 1910	20
1	120	..	2,204 KW.	8.5	Lg. 7 & 1½, or 3½, dis. 5%; pr. 1½ & sliding scale	Max. dem, flat rate & sl. scale with dis.	1,491,945	Data to Mar. 31, 1910	21
n.	26=70 H.P.	..	618 KW.	..	Lg. 5 & 4½; pb. lg. 4½; pr. 2, 2½, & 3	Flat rate w. dis., 2-rate mtr., & special	221,059	Data to Mar. 31, 1909	22
n.,	168=782 KW.	32=752 H.P.	3,162 KW.	5.2	Lg. 6 & 3, or 4½ & 4*; pr. 3 & 1, or 2 to 1½ (day 1); tr. 2 to 1½	Max. dem., flat, sl. sc., 2-rate & cont.	1,130,092	Lighting and traction. *Pb. lg. arc £17½, inc. £3 and £2½. Data to Mar. 31, 1910	23
n.,	141=476 H.P.	..	2,533 KW.	4.28	Lg. 5; pb. lg. arc £24, inc. £6; pr. 1½	Flat rate, 2-rate mtr.,& cont., w. dis.	1,475,811	Supply by company 1890-7. Data to March 31, 1909 ..	24
e.	72=239.4 KW.	32=1,173 H.P.	1,644 KW.	17	Lg. 6 & 2; pb. lg. arc £16; pr. 3 & 1; tr. 1½	Max. demand & flat rate	737,396	Lighting and traction. Data to Mar. 31, 1909	25
l.	23=56 H.P.	..	1,956 KW.	7.6	Lg. 5*; pb. lg. arc £20 p.a.; pr. 2 & 1½	Flat rate	911,840	*Free wiring 5d. per unit plus fittings rentals. Data to Mar. 31, 1909	26
ic.	137 H.P. ..	..	1,933 KW.	..	Lg. 5½; pr. 1	Flat rate	911,000	.. ..	27
.	5,835 H.P. ..	464=13,920 H.P.	20,911 KW.	7.5	Lg. 5½ & 1½, or 3½; pb. lg. arc £15 p.a.; pr. 2½ to 1	Max. demand & flat rate	12,080,477	Lg. & traction. 3-phase 50~ to substns. at 6,000 v. Data to March 31, 1910	28
l.,	60=300 H.P.	..	562 KW. ..	7	Lg. 6 & 3; pb. lg. arc £17 p.a.; pr. 4 & 1½, spl. to large users	Max. dem., flat rate, 2-rate mtr. & cont.	253,857	Data to Dec. 31, 1909	29
l.,	30=82 H.P.	..	1,236 KW.	9.9	Lg. 7, 2 & 1½; pb. lg. arc £23, inc. £8 & £4.6; pr. 2*	Max. demand & flat rate	556,816	*Prept. meters 6d. per unit. Data to Mar. 31, 1908 ..	30
k	14=28.3 H.P.	32=800 H.P.	1,167.3 KW. (approx.)	..	Lg. 6†; pb. lg. cbn. £3½, N. £4½ p.a.; pr. 3 to 2(day), or 6 & 2	Flat rate	562,557	Tr. stn. giving bulk supply for lg. *Also £5,137 spent on pr. stn. †Less 2½%—14 days. Data to Mar. 31, 1909	31
l.	6=19½ H.P.	6=105 H.P.	1,023 KW.	11	Lg. 4½; pb. lg., pr. & tr. 2 ..	Flat rate	364,696	Lighting and traction. Data to Dec. 31, 1909	32
	146=1,001 H.P.	..	3,788 KW.	6½	Lg. 6. 3 & 1½, or 4; pb. lg. arc £18½; pr. 2 to 1	Max. dem., flat, sl. scale, 2-rate & cont.	1,543,492	Data to Mar. 31, 1910	33
	2,398=20,085 H.P.	See other Table	28,002 KW. (ex. tr.)	25.04	Lg. 4 to 2 (spl. 2½ to 2); pr. 1.85 to 0.7; tr. 1½ to 1	Flat rate with discount	29,079,376	Lighting and traction. Data to Mar. 31, 1910. * Three ph., 25~ at 5,000 v. to substns. and to large consumers	34
	629 = 2,712½ H.P.†	202=4,655 H.P.	10,068 KW.	11.6	Lg. 6 & 3 (1 hr.) or 4; pb. lg. 1.3; pr. 1½ to 0.45; tr. 1.4	Max. dem.,flat w. dis. sl. sc.,2-rate & t. sw.	4,308,005	Lg. and tr. *Traction, 500 v. D.C. †Including 304 motors=1216 H.P. on hire. Data to Mar. 31, 1910	35
	156=1,078 H.P.	122=2,214 H.P.	*	*	Lg. 6 & 2, or 5; pb. lg. 3 & 2½; pr. 3 & 1 (htg. 1); tr. 2 to 1½	Max. dem.,flat rate and sliding scale	3,053,380	Lg. and tr. *Cannot be stated at present, owing to genl. adoption of mtl. fil. lamps. Data to Mar. 31, 1909	36
	1,269 KW. (inc. htg.) 915=10,017 H.P.	..	1,893 KW.	..	Lg. 4; pr. 2½ to 1½	Flat rate, sl. scale & contract	..	*Used as stand-by; Bulk supply from Ns. o/T. E. S. Co. Cons. engrs. Merz & McLellan. Data to Dec. 31, 1909	37
	58=350 H.P.	See other Table ..	13,083 KW. 718.5 KW.	11 49	Lg. 3½ & 1, or 3½ less 10%; pr. 2 to 1, less 10 per cent.; tr. 1.1 Lg. 5 with dis. & spl.; pb. lg. contract; pr. 2½	Max. demand & flat rate Flat rate and contract	11,993,271 593,000 (estd.)	Lighting and traction station. *Also three-phase supply at 400 v., 50~. Data to March 31, 1910 *Also stand-by supply=150 H.P. Data to May 15, 1910	38 39
=	2,237 H.P. ..	325 KW. ..	3,912 KW.	7.2	Lg. 6 & 1½, or 3½; pb. lg. 2; pr. 2 to 1; tr. 1½ to 1	Max. demand and flat rate	2,761,933	Lighting and traction. Data to Mar. 31, 1910	40
	..	See other Table	..	..	Pb. lg. 2	Flat rate	1,890,580	Public lighting & traction station (92½% of output for traction.) *Station plant and cables. Data to Mar. 31, '09	41
	192=502 H.P.	52=1,300 H.P.	7,522 KW.	8.25	Lg. 7 & 3½, 8% or 6½; pr. 2 & 2½; tr. 1½	Max.dem.,flat,w.d., 2-rate, cont. & spl.	2,950,487	Lighting and traction. *Also 400 v. A.C., and traction 580 v. D.C. Data to December 31, 1909	42
	1,545=6,770 H.P. (ex. bulk) ..	See other Table ..	14,388 KW. ex. tr. 420 KW. ..	5.02 4	Lg. 4 w. dis.†; pb. lg. arc £12¾; pr. 2 to ⅔; htg. 2 to 1; tr. 1½(2½ nt.) Lg. & pr., 6 & 3½; pb. lg., arc £15, inc. £2 p.a.	Flat rate, max.dem., sl. scale & time sw. Max. demand ..	17,000,000 (approx.) 167,260	Lg. & tr. Lamps free (one p. 30 u.). *50~3-ph. at 6,600 v. to substns. Tr. 500 D.C. †Also 7d. & 1d. m.d. Data to 31/3/10 District residential, no industries, hence no power load. Data to March 31, 1909	43 44
	21=136 H.P.	..	546 KW. ..	3	Lg. 6 & 4, or 5½; pb. lg. 2.9; pr. 4 & 1½, or 2½	Max. dem., flat rate, 2-r. & cont.	113,365	* F. Barritt Hills, Engineer & Manager	45
	506 H.P.	..	567 KW.	..	Lg. 4½; pb. lg. 3; pr. 1½; htg. 2½	Flat rate	387,287	7 large motors work occasionally only, from 5 to 150 H.P. Data to Mar. 31, 1910	46
	24=96 H.P.	..	300 KW.	14	Lg. 7 & 2, or 4½ to 4; pr. 3 & 1, or 2	Max. demand & flat rate	107,592	Data to Dec. 31, 1909	47
l.	37=104 H.P.	..	793 KW.	12.6	Lg. 5 to 3½; pb. lg. arc £15, inc. & N. £4; pr. 2 to 1½	Flat rate & sliding scale	333,305	*300 KW. being installed. Data to Mar. 31, 1910.. ..	48
	20=40 H.P.	..	170 KW.	4	Lg. 5; pr. 4, 3 & 2	Flat rate	52,482	Gas power. Data to Mar. 31, 1909	49
	460 = 2,468 H.P.†	80=2,400 H.P.	11,650 KW. (ex. tr.)	4.7	Lg. 6 & 2 m.d. 4d. & 3d. flat; pb. lg. 1½; pr. 1½ (t. sw. 1); tr. 1.35	Max. dem.,flat, sl. sc., t. sw., cont.w.d.,&spl.	9,000,000	Lg. & tr. *8,000 v. 3-ph. 50~to substations. †Including 189 motors=947 H.P. on hire. Data to Mar. 31, 1910	50
	1,201 = 9,785 H.P.	..	18,376 KW.	8.9	Lg. 4½ w.dis. to 3.15; pb. lg. arc £21, £14½ per lp. p.a.; pr. 1½ w. dis. to 1.2	Max. dem., flat rate w. dis., 2-rate, special	7,363,941	*Also 50~, 3-phase, at 210 volts. Data to Mar. 25, 1910	51
	55=150 H.P.	..	2,944 KW.	6	Lg. 7 & 4, or 6; pr. 4 & 1, or 2½; bulk supply 2	Max. demand, flat rate & 2-r. mtr.	840,382	54 KW. bulk supply to Chislehurst at 2,000 volts D.C. Data to Dec. 31, 1909	52
	16=56 H.P.	..	506 KW. ..	3	Lg. 5½; pb. lg. 2½; pr. 3 ..	Flat rate w. dis. ..	106,236	Data to May 15, 1909	53
	2=1½ H.P. ..	..	70 KW. ..	..	Lg. 7 w. dis.; pb. lg. contract ..	Flat rate	..	Part gas power. Data to Dec. 31, 1909	54
	55 H.P. ..	..	..	..	Lg. 5; pb. lg. contract; pr. 1½..	Flat rate with discount	..	Data to May 15, 1910	55
	12	..	120 KW. ..	31.5	Lg. 6; pr. 4	Flat rate	25,000	Suction gas power; overhead mains. Data to Sept., 1909	56
	241=710¾ H.P.	46=3,460 H.P.	5,297 KW.	12	Lg. 8½; pb. lg. 1½; pr. 1¾ & 1; tr. 1½	Lg., flat rate; pr., max. dem. w. dis.	3,949,887	Lighting and traction. Data to Mar. 31, 1910	57
	157=1,008 H.P.	..	..	..	Lg. 7 & 2, or 5; pb. lg. 3; pr. 2 to ⅞	Max. demand, flat rate & sl. scale	953,677	Data to Dec. 31, 1909	58
	150=963 H.P.	40=1,000 H.P.	1,748 KW.	9.7	Lg. 5, or 6 & 3; pb. lg. 3; pr. 1 to ¾, or 3 & 1, or 2 to 1½*; tr. av. 1.37	Max. demand, flat rate, & sl. scale	1,529,517	Lighting and traction. *Pr., 80% of total on restricted-hour system. Data to Mar. 31, 1910	59
	314=2,506 H.P.	See other Table	5,817 KW.	..	Lg. 8¾, 8½, 2½; pb. lg. arc £11½ & £13½, inc. £1½; pr. 1½, 1 & ⅝; tr. 1	Flat rate & sliding scale	3,911,838	Lighting and traction. Data to Mar. 31, 1909 (part 1910). *4,000 KW. being installed	60
	35=187 H.P.	..	527 KW.	8	Lg. 6 (dis. to 8¾%) pb. lg. arc £14, inc. £2; pr. 3 to 2¼* w.dis.	Flat rate with discounts & special	327,857 (approx.)	*Corp. waterworks, 50 H.P., supplied at 1.25d. per unit average. Data to Mar. 31, 1910	61
	39=123¾ H.P.	..	1,004 KW.	11.1	Lg. 6, 7 & 3, 2; pb. lg. arc £20 p.a.; pr. 2½, 1½, 1½	Max. dem., flat & sl. scale with dis., etc.	816,030	Max. load in September; load through season heavier than in winter. Data to Mar. 31, 1910	62
	121=1,443 H.P.	20=500 H.P.	3,112 KW.	14	Lg. 7 & 4, or 6; pb. lg. contract; pr. 4 & 1, or 2½; tr. 1½	Max. demand, flat rate & contract	2,729,489	Lighting and traction. *Also A.C. at 3,000 v. Data to Dec. 31, 1909	63
	82=211 B.H.P.	..	1,945 KW.	10	Lg. 6 on 200 v., 7 on 100 v., with spcl. discounts; pr. 5½ to 1½	Flat rate with discounts, & contract	621,448	Data to Dec. 31, 1909	64
	13=43 H.P.	..	237 KW.	..	Lg. 4; pb. lg. 3; pr. 2	Flat rate	100,000 est.	*Also destructor, £7,000. Energy obtained from refuse almost entirely. Data to May 15, 1909	65
	96=305 H.P.	..	1,118 KW.	6.9	Lg. 7 & 1½, or 4½; pb. lg. arc £25, inc. £3½ p.a.*; pr. 1½	Max. demand and flat rate	688,852	*Two tant. 32 C.P. each, or two Osram 25 C.P., or one cbn., 25 C.P. Data to Mar. 31, 1910.	66
	502=3,329 H.P.	..	7,890 KW.	10.5	Lg. 7 & 2, or 3½; pb. lg. arc £14, flame £20, p.a.†; pr. 4 & 1, or 1½	Max. dem., flat rate, sl. scl., 2-rate mtr.	4,548,898	*Tr.dept. sup. 3-ph. 6600 v., 50~ & 400 v., D.C. at ¾d. p.u. †Inc. £2 14s. & £4 1s. p.a. Data 31/3/10	67
	263=760 H.P.	30=450 H.P.	1,669 KW.	15.5	Lg. 5 to 4½; pb. lg. [illegible]	Max. demand, flat [illegible]	[illegible]	[illegible]	

LONDON.

	Place.	
229	LIMERICK	
230	LINCOLN	
231	LIVERPOOL	
232	LLANDILO	
233	LLANDRINDOD WELLS	
234	LLANDUDNO	
235	LLANCOLLEN	
236	LLANRWST AND TREFRIW	
237	BATTERSEA	
238	BERMONDSEY	
239	CHELSEA	
240	CITY OF LONDON ..	
241	FINSBURY	
242	FULHAM	
243	GREENWICH, LEWISHAM, PENGE & SYDENHAM	
244	HACKNEY	
245	HAMMERSMITH ..	
246	HAMPSTEAD	
247	ISLINGTON	
248	KENSINGTON	
249	KENSINGTON (N. OF HIGH STREET)	
250	KENSINGTON AND KNIGHTSBRIDGE	
251	KENSINGTON AND NOTTING HILL	
252	LAMBETH	
253	LONDON* & WESTMINSTER	
254	MARYLEBONE	
255	MID LONDON AND PADDINGTON	
256	POPLAR	
257	ST. JAMES' WESTMINSTER	
258	ST. PANCRAS	
259	SHOREDITCH	
260	SMITHFIELD MARKETS	
261	SOUTHWARK	
262	STEPNEY	
263	STOKE NEWINGTON ..	
264	WANDSWORTH	
265	WESTMINSTER ..	
266	WESTMINSTER & ST. JAMES	
267	WESTMINSTER, HOLBORN & CITY OF L.	
268	WOOLWICH, PLUMSTEAD & ELTHAM	
269	LONDONDERRY	
270	LONG EATON	
271	LONG EATON	
272	LONGTON	
273	LOUGHBOROUGH ..	
274	LOWESTOFT	
275	LUDLOW	
276	LUTON	
277	LYME REGIS	
278	LYMINGTON	
279	LYNTON & LYNMOUTH	
280	MACROOM	
281	MAIDENHEAD	
282	MAIDSTONE	
283	MALTON & NORTON	
284	MALVERN	
285	MANCHESTER	
286	MANSFIELD	
287	MARDY (CLAM.) ..	
288	MARGATE & BROADSTAIRS & S. PETERS	
289	MARKET DRAYTON ..	
290	MELROSE	
291	MELTON MOWBRAY ..	
292	MERTHYR TYDFIL ..	
293	MEVAGISSEY	
294	MEXBOROUGH	

36	BLACKPOOL	Blackpool Corporation	1893	Charles Furness	200 A.C., 500 D.C.	83—, 1-ph., & direct	4,450	2,584	175 KW.	£201,000	inc. hg. *	279 arc, 464 cbn., 362 N.	156=1,078 H.P.	122=2,2	
37	BLYTH & COWPEN, & BEDLINGTONSHIRE	Northern Counties Electricity Supply Co., Ltd.	1902	C. W. Fairweather	230 & 460	Direct ..	1,000*	675	..	..	622 KW.	2 KW. ..	1,269 KW. (inc. hg.)		
38	BOLTON	Bolton Corporation ..	1894	J. G. Lovely (Res.) A. A. Day ..	100&200A.C.* 230 & 460D.C.	83—, 1-ph.,* & direct	7,600	..	..	£348,285	5,564 KW.	..	915=10,017 H.P.	See ot	
39	BO'NESS	National Electric Construction Co., Ltd. (for the Corporation)	1905	H. G. Young ..	230 & 460	Direct ..	500*	292	36.8 KW.	£35,000	452.4 KW.	30 arc, 87 cbn., 72 mtl.	58=350 H.P.		
40	BOOTLE	Bootle Corporation ..	1899	T. Dawson Clothier	220 & 440 tr. 500	Direct ..	2,050	1,360	150 KW.	£114,628	1,541 KW.	174 arc ; inc. = 680 S-C.P.	2,237 H.P. ..	325 KW	
41	BOURNEMOUTH	Bournemouth Corporation ..	1902	I. Bulfin ..	550	Direct ..	1,200	1,000	..	£75,000*	..	132 arc ..	..	See ot	
42	BOURNEMOUTH, POOLE AND CHRISTCHURCH	Bournemouth & Poole Electric Supply Co., Ltd.	1889	E. Ll. Ingram ..	100&200A.C.* 250 & 500D.C.	100—, 1-ph., & direct	4,400	2,281	355 KW.	£443,200	6,694 KW.	129 mtl.	192=502 H.P.	52=1,3	
43	BRADFORD	Bradford Corporation ..	1889	Thomas Roles ..	230&460 D.C., 230 &400 A.C.	Direct, & 50 —, 3-ph.*	8,180 D.C.	7,922	230 KW. lg. 250 KW. tr.	£765,300 approx.	6,406 KW. inc. bulk	69 arc, 12 cbn.	1,545=6,770 H.P. (ex. bulk)	See otl	
44	BRAY	Bray Urban District Council	1892	W. J. U. Sowter	100 & 200	60—, 1-ph.	320	190	..	£17,000	383 KW.	33 arc, 200 cbn., 50 mtl.	..	..	
45	BRECHIN	North of Scotland Electric Light & Power Co., Ltd.	1901	Ernest Ames (res.)*	240 & 480	Direct ..	282	109.8	..	£34,074	404 KW.	251 cbn., 5 N.	21=136 H.P.	..	
46	BRIDGEND & DIST.	Bridgend Urban District Council	1908	W. Welbury (pro. tem.)	500, 440, 220 A.C.	60—, 2-ph.	470	210	..	£15,600	190 KW.	368 mtl.	506 H.P.	..	
47	BRIDGWATER	Bridgwater & District Electric Supply & Traction Co., Ltd.	1904	Harold Walker..	230 & 460	Direct ..	200	103	49 KW.	£24,677	210 KW.	15 arc, 184 inc.	24=96 H.P.	..	
48	BRIDLINGTON	Bridlington Corporation ..	1905	Arthur J. Beckett	220 & 440	Direct ..	440*	426	480 A.H.	£38,700	628 KW.	52 arc, 450 mtl.	37=104 H.P.	..	
49	BRICHOUSE	Brighouse Corporation ..	1898	A. Aspinall ..	110	Direct ..	70	55	22 KW.	£4,674	134 KW.	..	20=40 H.P.	..	
50	BRIGHTON	Brighton Corporation ..	1891	A. Wright (Cons.) J. Christie (Man.)	115, 230, & 460 ; tr. 550	Direct* ..	7,300	5,400	400 A.H.lg. 1200A.H.tr.	£780,645	9,300 KW.	372 arc, 543 cbn., 3,019 mtl.	460 = 2,468 H.P.†	80=2,4	
51	BRISTOL	Bristol Corporation	1893	H. Faraday Proctor	105 & 210A.C. 250 & 500D.C.	93—, 1-ph.* & direct	12,050	5,729	70 KW.	£775,707	6,980 KW.	693 arc, 9 cbn.	1,201 = 9,785 H.P.	..	
52	BROMLEY (KENT)	Bromley (Kent) Electric Light & Power Co., Ltd.	1898	R. B. Barker ..	210	Direct ..	1,620	657	68 KW.	£131,699	2,440 KW.	3 mtl.	55=150 H.P.	..	
53	BROUGHTY FERRY	Broughty Ferry Corporation	1902	J. L. Turnbull ..	230 & 460	Direct ..	150	90	250 KW.	£19,461	445 KW.	12 arc, 36 cbn., 4 mtl.	16=56 H.P.	..	
54	BUCKINGHAM	Buckingham Electric Light Co.	1889	T. Gillies (Man.)	220	Direct ..	70	40	..	..	About 66KW.	90 mtl.	2=1½ H.P. ..	..	
55	BUNCRANA	Buncrana Electric Supply Co.	1905	John K. Swan ..	235 & 470	Direct ..	125	..	..	..	..	5 arc, 30 cbn.	55 H.P. ..	..	
56	BURGESS HILL	Burgess Hill & District Electric Supply Co., Ltd.	1908	W. Simms ..	230	Direct ..	64	50	32 KW.	£5,500	100 KW.	..	12	..	
57	BURNLEY	Burnley Corporation ..	1898	Jas. E. Starkie..	110,220 & 440 tr. 500	Direct ..	2,640	1,772	66 KW. lg. 250 KW.tr.	£112,242	2,187 KW.	3 arc, 12 cbn.	241=710½ H.P.	46=3,46	
58	BURSLEM	Burslem Corporation	1905	Ashton Bremner	230 & 440	Direct ..	1,250	642	70 KW.	£87,850	19,184 KW.	23 arc, 42 cbn.	157=1,008 H.P.	..	
59	BURTON-ON-TRENT	Burton-on-Trent Corporation	1894	P. J. Pringle ..	100 & 200A.C. tr. 500 D.C.	75—, 1-ph., & direct	1,710	500 lg. 375 tr.	..	£83,395	1,045 KW.	1 arc ..	150=938 H.P.	40=1,00	
60	BURY (LANCS.)	Bury Corporation	1896	S. J. Watson ..	220 & 440 tr. 500	Direct ..	2,260*	2,065	154 KW.lg. 225 KW.tr.	£117,053	3,219 KW.	36 arc, 21 inc.	314=2,506 H.P.	See other T	
61	BURY ST. EDMUNDS	Bury St. Edmunds Corporation	1900	S. E. Day ..	200 & 400	Direct ..	220	193	60 KW.	£30,000	388 KW.	14 arc, 178 cbn., 242 mtl.	35=187 H.P.	..	
62	BUXTON	Buxton Urban District Council	1900	W. J. Leeming..	230 & 460	Direct ..	794	343	..	£46,325	30,423 KW.	30 arc ..	39=123½ H.P.	..	
63	CAMBORNE, REDRUTH AND ILLOGAN	Urban Electric Supply Co., Ltd.	1902	L. A. Hards ..	240 & 480* tr. 550	Direct, and 25—, 3-ph.	1,025	924	200 KW.lg. 150 KW. tr.	£120,420	496 KW.	2 arc, 220 cbn.	121=1,443 H.P.	20=500	
64	CAMBRIDGE	Cambridge Electric Supply Co., Ltd.	1892	R. C. Pierce ..	200	90—, 1-ph.	2,000	598	..	£129,408	1,892 KW.	1 arc ..	82=211 B.H.P.	..	
65	CAMBUSLANG	Lanark County Council ..	1905	.. .. ..	250	Direct ..	200	120	53 KW.	£16,291*	163 KW.	20 arc, 6 cbn., 468 mtl., 5 N.	13=43 H.P.	..	
66	CANTERBURY	Canterbury Corporation ..	1899	C. A. Blascheck	220 & 440	Direct ..	900	465	66 KW.	£37,593	765 KW.	12 arc, 69 cbn., 584 mtl.	96=395 H.P.	..	
67	CARDIFF	Cardiff Corporation	1894	Arthur Ellis ..	200& 400 A.C. & D.C.	40—, 1-ph.,* & direct	1,560 A.C. 1,800 m.g.	2,766	850 KW.	£268,050	4,948 KW.	617 arc, 227 cbn., 142 mtl.	502=3,339 H.P.	..	
68	CARLISLE	Carlisle Corporation	1899	Sydney T. Allen	230 & 460, tr. 500	Direct ..	1,170	805	170 A. lg. 700 A. tr.	£67,377	1,084 KW.	52 arc, 20 mtl.	253=760 H.P.	30=450	
69	CARLOW	J. Alexander	1890	O. St. J. McKee	100 & 200	70—, 1-ph., & direct	115	..	40 KW. for 4 hrs.	..	68 KW.	18 arc, 84 inc.	1=67 H.P. ..	..	
70	CARNARVON	National Electric Construction Co., Ltd.*	1905	D. O. Evans ..	230 & 460	Direct ..	200	129	33 KW.	..	365 KW.	..	31=195 H.P.	..	
71	CATERHAM	Urban Electric Supply Co., Ltd.	1908	Henry Joseph ..	240 & 480	Direct ..	178	92	96.4 KW.	£34,336	354 KW.	..	68 KW. inc. htg.	..	
72	CHACFORD	Chagford & Devon Electric Light Co., Ltd.	1891	Geo. H. Reed ..	100	99—, 1-ph.	22	19	..	..	..	22 mtl.	..	..	
73	CHELMSFORD	Electric Supply Corporation, Ltd.	1890	K. A. Scott-Moncrieff*	100 & 200A.C., 110 D.C.	100—, 1-ph., & direct	860	377	..	£63,865	680 KW.	21 arc, 302 Nernst	65=230½ H.P.	..	
74	CHELTENHAM & CHARLTON KINCS	Cheltenham Corporation ..	1895	Walter J. Bache	100 & 200 tr. 550	100—, 1-ph., & D.C. for tr.	2,830	1,316	165 KW.	£154,076	2,000 KW.	388 arc, 19 cbn., 6 mtl.	49=121 H.P.	40=1,240	
75	CHEPSTOW	Chepstow Electric Lighting & Power Co., Ltd.	1904	G. L. Coventon	230	Direct ..	100	47.5	46 KW.	.. ..	93 KW.	10 mtl. ..	2=6 H.P.	..	
76	CHESHAM AND CHESHAM BOIS	Chesham Electric Light & Power Co., Ltd.	1904	R.J.J.Swan(Res.)	200, 230 & 460	Direct &50 — 3-ph.(C. B.)	250	175	100 A. for 2½ hrs.	£28,758	189 KW.	9 arc, 124 cbn., 75 mtl.	50=250 H.P.	..	
77	CHESTER	Chester Corporation	1896	S. E. Britton ..	210 & 420, tr. 500	Direct ..	1,323	1,320	273 KW.est 140 KW. tr.	£120,730	1,814 KW.	212 arc,354 cbn. 350 mtl., 179 N.	128=530 H.P.	36=1,230	
78	CHESTERFIELD	Chesterfield Corporation ..	1901	R. L. Acland ..	240 & 480 tr. 500	Direct ..	1,000	491 l. & p. 300 tr.	150 KW.	£56,878	1,816 KW.	24 arc, 48 mtl.	158=730 H.P.	30=760	
79	CHICHESTER	Chichester Electric Light & Power Co., Ltd.	1909 (June10)	R. V. Weare (Res.)*	220 & 440	Direct ..	200	66	75 KW.	..	100 KW.	..	5=17 H.P.	..	
80	CHISLEHURST	Chislehurst Electric Supply Co., Ltd.	1899	R. B. Baker ..	210	Direct ..	220*	92	53 KW.	£27,197	504 KW.	..	..	..	
81	CHISWICK	Chiswick Electricity Supply Corporation, Ltd.	1900	A. W. Money ..	220 & 440	Direct ..	921	560.2	132 KW.	..	1,075.7 KW.	..	67=866 H.P.	..	
82	CHURCH STRETTON	Church Stretton Electric Supply Co., Ltd.	1904	G. Payne ..	200 & 400	Direct ..	100	..	..	..	..	..	1=2 H.P. ..	..	
83	CLACTON-ON-SEA	Clacton-on-Sea Urban District Council	1906	H. W. Everitt ..	230 & 460	Direct ..	200	..	200 A. for 8 hrs.	£10,000	..	..	..	..	
84	CLECKHEATON	Cleckheaton Urban District Council	1902	A. Pickersgill ..	220 & 460 tr. 550	Direct ..	800	500	115 KW.	£28,357	..	5 arc, 33 mtl.	88=488 H.P.	600 H.P.	
85	COATBRIDGE AND AIRDRIE	Coatbridge and Airdrie Electric Supply Co., Ltd.	1894	F. J. Launchbury	240&480D.C., 400 A.C.*	Direct and 25—,3-ph.,	2,990†	1,500	480 A.H.	..	750 KW.	10 arc, 90 mtl., 140 N.	1,900 H.P. ..	..	
86	COLCHESTER	Colchester Corporation ..	1898	.. .. ..	210 & 420 tr. 500	Direct ..	2,020	895	..	£83,049	1,517 KW.	110 mtl., 242 Nernst	50=133 KW.	36=816 H	
87	COLNE	Colne Corporation	1901	A. G. Cooper ..	240 & 480 tr. 540	Direct ..	1,120	480	..	£47,791	518 KW.	2 arc. ..	171=417 H.P.	24=672 H	
88	COLWYN BAY	Colwyn Bay Urban District Council	1901	A. R. Tudman ..	230 & 440	Direct ..	*420	350	44 KW.	£34,634	523 KW.	75 arc, 12 posts mtl., 1 Nernst	15=94 H.P.	..	
89	CORK	Cork Electric Tramways and Lighting Co., Ltd.	1898	H. H. Nalder ..	230 & 460 tr. 500	Direct* ..	2,680	1,487 (ex. tr.)	300 KW.	£329,010†	1,956 KW.	90 arc ..	316=2,293½ H.P.	70=1,380	
90	COVENTRY	Coventry Corporation ..	1895	Geo. Tough ..	200 A.C.	50—, 2-ph.	8,000	3,754	..	£241,098	1,875 KW.	117 arc, 2 mtl.	601=5,828½ H.P.	..	
91	CRAWLEY	Sussex Electricity Supply Co.	1908	Edward Prior ..	230	Direct ..	80	50	40 KW.	£4,000	40 KW.	..	6=20 H.P. ..	..	
92	CREWE	Crewe Corporation	1900	H. H. Denton ..	230 & 460	Direct ..	700	440	150 KW.	£55,059	768 KW.	34 arc, 500cbn., 246 mtl.	52=195 H.P.	..	
93	CROMER	Cromer Electric Supply ..	1908	W. Bentley ..	240 & 480	Direct ..	180	146	19 KW.	£33,877	372 KW.	10 arc, 4 cbn. 6 mtl.	22=31 KW..	..	
94	CROYDON	Croydon Corporation.. ..	1896	Alec. C. Cramb..	200A.C.,220 & 460 D.C.*	60—, 1-ph. & direct	5,750	3,319	156 KW.	£351,044	6,029 KW.	419 arc, 317 mtl.	237=1,070 H.P.	200=5,000	
95	DALKEITH	Electric Supply Corporation Ltd.	1904	K. A. Scott-Moncrieff*	235 & 450	Direct ..	110	47	58 KW.	£15,800	124 KW.	2 arc, 16 mtl., 14 N.	29=74½ H.P.	..	
96	DARLINGTON	Darlington Corporation ..	1900	J. R. P. Lunn ..	230 & 460 tr. 500	Direct ..	1,970	1,211	368 KW.	£73,934	1,352 KW.	55 arc ..	210=2,003 H.P.	32=800 H	
97	DARTFORD	Dartford Urban District Council	1901	J. D. Pember ..	230 & 460 tr. 500	Direct ..	700	547	50 KW. lg. 125 KW. tr.	..	423 KW.	6 arc, 261 mtl.	59=588 H.P.	12=600 H	
98	DARTMOUTH	Urban Electric Supply Co., Ltd.	1902	G. E. Smith ..	240 & 480	Direct ..	330	223.8	108 KW.	£54,718	688 KW.	10 arc,188 cbn., 20 mtl.	29=193 H.P.	..	
99	DARWEN	Darwen Corporation	1899	Chas. Garnett ..	230 & 460 tr. 500	Direct ..	900	620	117 KW.	£57,846	631.6 KW.	19 arc, 1 cbn., 33 mtl., 111 N.	113=413 H.P.	32=1,120	
100	DENNY AND DUNIPACE	Denny and Dunipace Corporation	1903	Andrew G. Merriles	250 & 400	50—, 3-ph.	..	..	..	£1,077	10 KW.	38 mtl. ..	..	..	
101	DERBY	Derby Corporation	1893	T. P. Wilmshurst	230 & 460 D.C. 200 A.C. tr. 500	40—, 1-ph. & direct	5,000	2,800	375 A.	£300,000	4,800 KW.	186 arc, 518 cbn.	180=2,850 H.P.	96=2,000 H	
102	DEVONPORT	Devonport Corporation ..	1901 tr. 1902 lg.	J. W. Spark ..	220, 460 & 500	Direct ..	1,800	981	270 A. lg., 1,000 A. tr.	£123,690	987 KW.	20 arc, 1 inc.	47=122.5 H.P.	76=1,900 H	
103	DEWSBURY	Dewsbury Corporation ..	1894	R. H. Campion	230 & 440, tr. 550	Direct ..	1,050	960	360 A.H.lg., 150 KW.tr.	£58,481	834 KW.	31 arc, 33 cbn., 2 mtl.	138=644 H.P.	28=740 H	
104	DISS	Suffolk Electricity Supply Co., Ltd.	1898	Napier Prentice	200	Direct ..	48	28	40 KW.	..	40 KW.	..	5=8 H.P. ..	..	
105	DOLLAR	Electric Supply Corporation, Ltd.	1904	K. A. Scott-Moncrieff*	235	Direct ..	40	17.1	15 KW.	£7,000	64 KW.	26 mtl., 8 Nernst	5=1½ H.P. ..	..	
106	DONCASTER	Doncaster Corporation ..	1900	E. S. Rayner ..	230 & 460 tr. 500	Direct ..	1,200	825	75 KW.	£64,501	988 KW.	8 arc, 44 mtl.	79=362 H.P.	50=1,250 H	
107	DORKING	Dorking Electricity Supply ..	1904	Henry Joseph ..	240	Direct ..	180	163	49 KW.	£38,539	520 KW.	..	53 KW. (inc. htg.)	..	
108	DOVER	Dover Corporation	1895	L. W. Woodman	100 & 200A.C. 500 D.C.	100—, 1-ph. & direct	1,850	691	77 KW.	£187,194	1,568 KW.	65 arc ; inc. & N. = 444 S-C.P.	40=244 H.P.	21=1,100 H	
109	DUBLIN	Dublin Corporation	1899	Mark Ruddle ..	lg. 200, pr. 346	50—, 1-ph. & 3-ph.	6,000	3,400	..	£526,000	4,944 KW.	507 arc, 135 mtl.	364=1,670 H.P.	..	
110	DUDLEY	Dudley Corporation	1899	Charles E. Savage	230 &420 tr. 500	Direct ..	1,600	1,575	..	£88,000	985 KW.	56 arc, 223 cbn., 30 mtl.	110=753 H.P.	See other Table	
111	DULVERTON	Dulverton Electric Lighting Co., Ltd.	1904	J. P. Davis (Res.)	200	Direct ..	60	30	50 KW.	£3,780	63 KW.	36 cbn. ..	3=13 H.P.	..	
112	DUMBARTON	Electric Supply Corporation, Ltd.	1906	K. A. Scott-Moncrieff*	240 & 480 tr. 500	Direct ..	940	763	60 KW.	£43,480	191 KW.	..	69=665 H.P.	60=1,080 H	
113	DUMFRIES	Dumfries Electric Supply Co., Ltd.	1906	Talfourd Ely, Manager*	230	Direct ..	200	92	125 KW.	£31,568	90 KW.	..	28=50 H.P.	..	
114	DUNDEE	Dundee Corporation	1898	H. Richardson..	200 & 400 tr. 550	Direct ..	8,010	2,800	70 KW.	£172,135	3,221 KW.	93 arc ..	404=1,703 H.P.	144=3,600 H	
115	DUNFERMLINE	[illegible] ation	1894	J. Douglas Knight	102 & 204	40—, 1-ph.	1,770	1,182	94 KW.	£205,328	..	72 arc, 804 mtl.	57=196 H.P.	..	

699 = 4,713½ H.P.†	300 = 4,000 H.P.	10,000 KW.	11.6	Lg. 6 & 4 (1 hr.) or 4; pb. lg. 1.3 ; pr. 1½ to 0.45 ; tr. 1.4	Max. dem.,flat w. dis.	4,000,000	Lg. and tr. *Traction, 500 V. D.C. †Including 304 motors=1216 H.P. on hire. Data to Mar. 25, 1910	35	
156=1,078 H.P.	122=2,214 H.P.	*	*	Lg. 6 & 2, or 5 ; pb. lg. 3 & 2½ ; pr. 3 & 1 (htg. 1) ; tr. 2 to 1½	sl. scl.,2-rate & t. sw. Max. dem.,flat rate and sliding scale	3,059,260	Lg. and tr. *Cannot be stated at present, owing to genl. adoption of mtl. fil. lamps. Data to Mar. 31, 1909	36	
1,269 KW. (inc. hg.)	..	1,893 KW.	..	Lg. 4 ; pr. 2½ to 1½	Flat rate, sl. scale & contract	..	*Used as stand-by ; Bulk supply from Nc. o/T. E. S. Co. Cons. engrs. Merz & McLellan. Data to Dec. 31, 1909	37	
915=10,017 H.P.	See other Table	13,033 KW.	11	Lg. 3½ & 1, or 3½ less 10% ; pr. 2 to 1, less 10 per cent. ; tr. 1.1	Max. demand & flat rate	11,993,971	Lighting and traction station. *Also three-phase supply at 400 v., 50~. Data to March 31, 1910	38	
58=850 H.P.	..	713.5 KW.	49	Lg., 6 with dis. & spl. ; pb. lg. contract ; pr. 2½	Flat rate and contract	598,000 (estd.)	*Also stand-by supply=150 H.P. Data to May 15, 1910	39	
2,237 H.P. ..	325 KW. ..	3,912 KW.	7.2	Lg. 6 & 1½, or 5½ ; pb. lg. 2 ; pr. 2 to 1 ; tr. 1½ to 1	Max. demand and flat rate	2,761,933	Lighting and traction. Data to Mar. 31, 1910	40	
..	See other Table	..	..	Pb. lg. 2	Flat rate	1,890,580	Public lighting & traction station (92½% of output for traction.) *Station plant and cables. Data to Mar. 31, '09	41	
192=502 H.P.	52=1,300 H.P.	7,522 KW.	8.25	Lg. 7 & 3½, 8% or 6½ ; pr. 2 & 2½ ; tr. 1⅝	Max.dem.,flat,w.d., 2-rate, cont. & spl.	2,950,437	Lighting and traction. *Also 400 V. A.C., and traction 580 V. D.C. Data to December 31, 1909	42	
1,545=6,770 H.P. (ex. bulk)	See other Table	14,388 KW. ex. tr.	5.02	Lg. 4 w. dis.†; pb. lg. arc £12½ ; pr. 2 to 2½ ; htg. 2 to 1 ; tr. 1½(2½ nt.)	Flat rate, max.dem., sl. scale & time sw.	17,000,000 (approx.)	Lg. & tr. Lamps free (one p. 30 u.). *50~3-ph. at 6,600 V. to subsins. Tr. 600 D.C. †Also 7d. & 1d. m.d. Data to 31/3/10	43	
..	..	420 KW. ..	4	Lg. & pr., 6 & 3½ ; pb. lg., arc £15, inc. £2 p.a.	Max. demand ..	167,360	District residential, no industries, hence no power load. Data to March 31, 1909	44	
21=136 H.P.	..	546 KW. ..	3	Lg. 6 & 4, or 5½ ; pb. lg. 2.9 ; pr. 4 & 1½, or 2½	Max. dem., flat rate, 2-r. & cont.	118,265	* F. Barritt Hills, Engineer & Manager	45	
506 H.P.	..	567 KW.	..	Lg. 4½ ; pb. lg. 3 ; pr. 1½ ; htg. 2½	Flat rate	387,287	7 large motors work occasionally only, from 5 to 150 H.P. Data to Mar. 31, 1910	46	
24=96 H.P.	..	300 KW.	14	Lg. 7 & 2, or 4½ to 4 ; pr. 3 & 1, or 2	Max. demand & flat rate	107,592	Data to Dec. 31, 1909	47	
37=104 H.P.	..	798 KW.	12.6	Lg. 5 to 3½ ; pb. lg. arc £15, inc. & N. £4 ; pr. 2 to 1½	Flat rate & sliding scale	333,305	*300 KW. being installed. Data to Mar. 31, 1910.. ..	48	
20=40 H.P.	..	170 KW.	4	Lg. 5 ; pr. 4, 3 & 2	Flat rate	52,482	Gas power. Data to Mar. 31, 1909	49	
460 = 2,468 H.P.†	80=2,400 H.P.	11,650 KW. (ex. tr.)	4.7	Lg. 6 & 2 m.d. 4d. & 3d. flat ; pb. lg. 1½ ; pr. 1½ (t. sw. 1) ; tr. 1.85	Max. dem.,flat, sl. sc., t. sw., cont.w.d.,&spl.	9,000,000	Lg. & tr. *8,000 v. 3-ph. 50~to substations. †Including 189 motors=947 H.P. on hire. Data to Mar. 31, 1910	50	
1,201 = 9,785 H.P.	..	13,376 KW.	8.9	Lg. 4½ w.dis. to 3.15; pb. lg. arc £21. £14½ per lp. p.a.; pr. 1½ w. dis.to 1.2	Max. dem., flat rate w. dis., 2-rate, special	7,363,941	*Also 50~, 3-phase, at 210 volts. Data to Mar. 25, 1910	51	
55=150 H.P.	..	2,944 KW.	6	Lg. 7 & 4, or 6 ; pr. 4 & 1, or 2½ ; bulk supply 2	Max. demand, flat rate & 2-r. mtr.	840,382	54 KW. bulk supply to Chislehurst at 2,000 volts D.C. Data to Dec. 31, 1909	52	
16=56 H.P.	..	506 KW. ..	3	Lg. 5½ ; pb. lg. 2½ ; pr. 3 ..	Flat rate w. dis. ..	106,236	Data to May 15, 1909	53	
2=1½ H.P. ..	..	70 KW. ..	..	Lg. 7 w. dis.; pb. lg. contract ..	Flat rate	..	Part gas power. Data to Dec. 31, 1909	54	
55 H.P. ..	..	..	..	Lg. 5; pb. lg. contract; pr. 1½..	Flat rate with discount	..	Data to May 15, 1910	55	
12	..	120 KW. ..	31.5	Lg. 6 ; pr. 4	Flat rate	25,000	Suction gas power; overhead mains. Data to Sept., 1909	56	
241=710½ H.P.	46=3,460 H.P.	5,297 KW.	12	Lg. 3½ ; pb. lg. 1½ ; pr. 1½ & 1 ; tr. 1½	Lg., flat rate ; pr., max. dem. w. dis.	3,249,987	Lighting and traction. Data to Mar. 31, 1910	57	
157=1,008 H.P.	..	..	..	Lg. 7 & 2, or 5 ; pb. lg. 3 ; pr. 2 to ⅔	Max. demand, flat rate & sl. scale	953,677	Data to Dec. 31, 1909	58	
150=933 H.P.	40=1,000 H.P.	1,748 KW.	9.7	Lg. 5, or 6 & 3 ; pb. lg. 3 ; pr. 1 to ⅔, or 3 & 1, or 2 to 1½* ; tr. av. 1.37	Max. demand, flat rate, & sl. scale	1,529,517	Lighting and traction. *Pr., 80% of total on restricted-hour system. Data to Mar. 31, 1910	59	
314=2,506 H.P.	See other Table	5,317 KW.	..	Lg. 3½, 3½, 2½ ; pb. lg. arc £11½ & £13½, inc. £1½ ; pr. 1½, 1 & ⅝ ; tr. 1	Flat rate & sliding scale	3,911,888	Lighting and traction. Data to Mar. 31, 1909 (part 1910). *4,000 KW. being installed	60	
85=187 H.P.	..	527 KW.	8	Lg. 6 (dis. to 6⅔%) pb. lg. arc £14, inc. £2 ; pr. 3 to 2½* w.dis.	Flat rate with discounts & special	327,857 (approx.)	*Corp. waterworks, 50 H.P., supplied at 1.25d. per unit average. Data to Mar. 31, 1910	61	
39=123½ H.P.	..	1,004 KW.	11.1	Lg. 6, 7 & 3, 2 ; pb. lg. arc £20 p.a. ; pr. 2½, 1½ & ⅔	Max. dem., flat & sl. scale with dis., etc.	316,080	Max. load in September; load through season heavier than in winter. Data to Mar. 31, 1910	62	
121=1,443 H.P.	20=500 H.P.	2,112 KW.	14	Lg. 7 & 4, or 6 ; pb. lg. contract ; pr. 4 & 1, or 2½ ; tr. 1½	Max. demand, flat rate & contract	2,729,439	Lighting and traction. *Also A.C. at 3,000 V. Data to Dec. 31, 1909	63	
82=211 B.H.P.	..	1,945 KW.	10	Lg. 6 on 200 v., 7 on 100 v., with spcl. discounts ; pr. 3½ to 1½	Flat rate with discounts, & contract	621,448	Data to Dec. 31, 1909	64	
13=43 H.P.	..	237 KW.	..	Lg. 4 ; pb. lg. 2 ; pr. 2	Flat rate	100,000 est.	*Also destructor, £7,000. Energy obtained from refuse almost entirely. Data to May 15, 1909	65	
96=395 H.P.	..	1,118 KW.	6.9	Lg. 7 & 1½, or 4½ ; pb. lg. arc £25, inc. £3½ p.a.* ; pr. 1½	Max. demand and flat rate	688,852	*Two tant. 25 C.P. each, or two Osram 25 C.P., or one chn., 25 C.P. Data to Mar. 31, 1910.	66	
502=3,329 H.P.	..	7,890 KW.	10.5	Lg. 7 & 2, or 3½ ; pb. lg. arc £14, flame £20, p.a.† ; pr. 4 & 1, or 1½	Max. dem., flat rate, sl. scl., 2-rate mtr.	4,548,898	*Tr.dept. sup. 3-ph. 6600 v., 50~ & 400 v., D.C. at 3d. p.u. †Inc. £2 14s. & £4 1s. p.a. Data 31/3/10	67	
253=760 H.P.	30=450 H.P.	1,860 KW.	15.5	Lg. 5 to 4* ; pb. lg. arc £21 13s 4d & £15 ; pr. 1(restd. hrs. 3½) ; tr. 2 to 1½	Max. demand, flat, sl. sc., 2 rate & spl.	1,298,576	Lighting and traction. *Also £7 per KW. m.d. & 2d. per unit. Data to Mar. 31, 1910	68	
1=67 H.P. ..	..	117 KW. ..	..	Lg. 7½ w. dis. (=6 to 5½) ; pb. lg. contract	Flat rate with discounts	68,479	5 miles overhead mains to Carlow. Water power; steam plant at C. as stand-by	69	
81=195 H.P.	..	365 KW. ..	16	Lg. 5 ; pr. 2½, w. discounts ..	Flat rate	92,514	*Leased from the Corporation. Data to Mar. 25, 1910 ..	70	
68 KW. inc. htg.	..	422 KW. ..	8.7	Lg. 7 & 4, or 6 ; pr. 4 & 1½, or 2½	Max. demand & flat rate	97,250	Data to Dec. 31, 1909	71	
..	..	..	..	Lg. 6 ; pb. lg. inc. £2 p.a. ..	Flat rate	..	Water power. Data to April 13, 1910	72	
65=230½ H.P.	..	925 KW.	8.9	Lg. 5½ to 4½ ; pb lg. arc £25½, N. £3 3s. p.a. ; pr. 3	Sliding scale with discounts	509,787	*Res. Eng. & Manager, J. Eustace. Data to Dec. 31, 1909	73	
49=121 H.P.	40=1,240 H.P.	2,223 KW. (ex. tr.)	..	Lg. 5½, 4 & 2 ; pb. lg. 3 ; pr. 2 ; tr. 1.6, 1.1, & 0.75	Max. demand, flat rate & contract	1,730,809 (estd.)	Lighting and traction. Lighting A.C., Tramway Co. supplied with D.C. Data to Mar. 31, 1910	74	
2=6 H.P.	..	..	..	Lg. 6; pr. 2½	Flat rate	26,789	Data to Dec. 31, 1909	75	
50=250 H.P.	..	894 KW. ..	5.6	Lg. 6; pb. lg. contract ; pr. 4 & 1½, or 2	Flat rate, contract & max. demand	233,038	Data to Dec. 31, 1909	76	
128=530 H.P.	36=1,230 H.P.	3,497 KW.	..	Lg. 3½ ; pb. lg. inc. £5,006 p.a. ; pr.1½ & 1 ; tr.0.69 p.u. + £962 p.a.	Flat rate w. dis. & contract	1,869,073	Lighting and traction. Data to Mar. 23, 1910	77	
158=730 H.P.	30=760 H.P.	2,434 KW. (inc. tr.)	14.6	Lg. 6 & 3, or 4, less 10% ; pb. lg. arc £12½ ; pr. 1½, 1½ & 1 ; tr. 1½	Max. demand & flat rate with dis.	1,085,305	Lighting and traction. Data to Mar. 31, 1910	78	
5=17 H.P.	..	112 KW. ..	..	Lg. 6; pr. 2½ & 1½	Flat rate	..	*Horace Boot, cons. eng. Pb. lg. cont. obtained as from Dec. 31, 1910. Diesel oil-engine plant. Data to Dec. 31, '09	79	
..	..	504 KW. ..	5	Lg. 8 & 4, or 7; pr. 4	Max. demand and flat rate	121,974	*Bulk supply from Bromley at 2,000 v. Data to Dec. 31, 1909	80	
67=366 H.P.	..	1,482.6 KW.	..	Lg. 5 (shops 4) ; pr. 2 to 1½ ..	Flat rate with discounts	809,697	Data to Dec. 31, 1909	81	
1=2 H.P. ..	..	64 KW. ..	..	Lg. 6; pr. 5 & 1½..	Flat rate	19,278	Suction gas plant	82	
..	..	..	..	Lg. 5; pr. 3	Flat rate	..	.. ..	83	
98=488 H.P.	600 H.P. ..	970 KW.	25.2	Lg. 4 ; pb. lg. 2 ; pr. 2, 1, ¾ & ½* tr. 1.5 to 1.3	Flat rate & sliding scale	669,557	Lighting and traction. *102 H.P. under agreement at ¾d. per unit. Data to Mar. 31, 1910	84	
1,900 H.P. ..	..	2,948 KW.	..	Lg. 4	Flat rate & sliding scale	2,052,375	Lg. & tr. *Traction 550 V. D.C. †Part of supply bulk from Clyde Valley Elec. Power Co. Data to Dec. 31, 1909	85	
50=136 KW.	36=816 H.P.	2,038 KW.	12.8	Lg. 5 to 3½ ; pb. lg. 2½ & 1½ ; pr. 4 to 1 ; bulk, 1½ to 1 ; tr. 1½	Flat rate with discounts	1,372,840	Lighting and traction. Data to Mar. 31, 1909 (part 1910)	86	
171=417 H.P.	24=672 H.P.	1,826 KW.	2.2	Lg. 6 & 2½, 4½ ; pr. 3 & 1, or 2½ ; tr. 2 to 1½	Max. demand and flat rate	714,320	Lighting and traction. Motor-gen. 125 K.V.A., 50~, 3-ph., for transmission. Data to Mar. 31, 1910	87	
15=94 H.P.	..	676.5 KW.	..	Lg. 5; pb. lg. 2 ; pr. 3	Flat rate	222,922 (1907)	Data to Mar. 31, 1910	88	
316=2,226½ H.P.	70=1,330 H.P.	4,633 KW.	4.5	Lg. 5, 4 & 3; pb. lg. arc £15 p.a. ; pr. 2 & 1½	Flat rate determined by max. demand	3,595,303	Lighting and traction. *6,000 V. 50~ 3-ph. trans. †Lg. £155,544 ; tr. £173,466. Data to Dec. 31, 1909	89	
601=5,823½ H.P.	..	7,703 KW.	11.7	Lg. 6, 3 & 1, or 4½ ; pb. lg. £800 p.a. ; pr. 1½ to 1	Max. demand and flat rate	6,093,825	Data to Mar. 31, 1910	90	
6=20 H.P. ..	..	60 KW.	20	Lg. 6 ; pr. 4	Flat rate	37,000	Suction gas plant, and overhead mains. Data to June, 1909	91	
52=195 H.P.	..	980 KW.	6.6	Lg. 6 & 3, or 4 ; pb. lg. 2½ ; pr. 3 to 1	Max. dem., flat & sl. scale with dis.	636,275	Data to Mar. 31, 1910	92	
32=31 KW. ..	..	411 KW.	4	Lg. 7 & 4, or 6* ; pb. lg. arc £17 p.a. ; pr. 4 & 1½, or 2½	Max. demand and flat rate with dis.	94,967	*Slot meter 7d. per unit, inc. meter rent. Data to Dec. 31, 1909	93	
237=1,070 H.P.	200=5,000 H.P.	12,547 KW.	5	Lg. 7 & 1½, or 4 (bamnt 2½) ; pr. (t. sw.) 3 & 1, or 2½ ; tr. 2 to 1½	Max. dem., flat, cont w. dis., time sw.	7,185,656	Lg.& tr. *Tr.550 v. †Pb.lg.arc £15; inc.£3 8s 6d. £5 16s 6d. and £2 18s. 4d. p.a. Htg., 1½d. Data to Mar. 31, 1910	94	
29=74½ H.P.	..	200 KW. ..	21.2	Lg. 4½ less 10 % ; pb. lg. 3 ; pr. 3 ; hg. 1½	Flat rate	73,513	*Resident Engineer, J. A. Gow-Russell. Data to Dec. 31, 1909	95	
210=2,093 H.P.	92=800 H.P.	3,822 KW.	67	Lg. 4 & 1½, or 3½ ; pb. g. arc £15 p.a.; pr. 1½ to ¾* ; tr. 1	Flat rate, max. demand & sl. scale	1,834,676	Lighting and traction. *Also £4 per KW. p.a. and ½d. per unit. Data to Mar. 31, 1910	96	
59=588 H.P.	12=600 H.P.	1,295 KW.	26.2	Lg. 7 & 2, or 4* ; pb. lg. arc £21, £10† ; pr. 2½ to 1½‡ ; tr. 2 to 1½	Max. demand and flat rate w. dis.	904,999	Lg. & tr. *Prepd. meters, 6d. †Mtl. £4 & £3 3s. ‡Also £5 per KW. & 1½ p.u. Data to Mar. 31, 1910	97	
29=193 H.P.	..	782 KW.	3.2	Lg. 7 & 3, or 6; pb. lg. £550 p.a. ; pr. 4 & 1½, or 2½	Max. demand and flat rate	876,578	Data to Dec. 31, 1909	98	
113=413 H.P.	32=1,130 H.P.	1,074 KW.	9.4	Lg. 4½ ; pb. lg. 3 ; pr. 2 ; tr. 1⅔	Flat rate and contract	660,812	Lighting and traction, with destructor. Data to Mar. 31, 1908	99	
..	..	18 KW.	..	Lg. 4, minimum £1 p.a. ; pb. lg. 3 ; pr. 2½ & 2, min. £2 p.a.	Flat rate	4,810	Data to May 15, 1910	100	
180=2,850 H.P.	98=2,000 H.P.	8,000 KW.	6.6	Lg. 6 to 2½ ; pb. lg. inc. 2 ; pr. 3 to 1 ; tr. 1½	Max. demand and sliding scale*	4,500,000	Lg. & tr. *Special max. demand rates for lg. and pr. ; p'b. lg., arc £23 (int. £10). Data for 1909	101	
47=122.5 H.P.	76=1,900 H.P.	2,495 KW.	3.5	Lg. 4* ; pb. lg. arc £22½, inc. £3½ ; pr. 1½ ; tr. 8 to 1.4	Flat, sl. sc., 2-rate, cont., t. sw., spl.	1,651,614	Lighting and traction. *By 2-rate mtr., 4 & 1½d. Data to Mar. 31, 1910	102	
138=644 H.P.	28=740 H.P.	1,950 KW.	8.8	Lg. 5½ & 3, or 4 ; pb.lg. 3½ & 3 ; pr. 2½ & 1 (t. sw. 1) ; tr. 1.6, 1.5 & 1.4	Max. demand and flat rate	1,309,575	Traction supply to Yorks. (W.D.) Elec. Trys., and to Dewsbury & Ossett Trys. Data to Mar. 31, 1910	103	
5=8 H.P. ..	..	45 KW. ..	..	Lg. 8 & 6; pr. 6 to 3	Max. demand and flat rate	..	Gas power	104	
5=1½ H.P. ..	..	63 KW.	8.9	Lg. 6; pb. lg. 3 ; pr. 3 ; hg. 1½	Flat rate & sliding scale	15,874	Overhead mains, bare copper. *Resident engineer, J. B. Mitchell. Data to Dec. 31, 1909	105	
79=362 H.P.	50=1,250 H.P.	2,237 KW.	5	Lg. 5, 4½ & 3 ; pb. lg. £230 p.a.; pr. 2 to 1 ; tr. 1⅓	Max. demand and flat rate	1,040,665	Lighting and traction. Data to Mar. 31, 1910	106	
53 KW. (inc. htg.)	..	876 KW.	8.1	Lg. 7 & 4, or 6; pr. 2½	Max. demand & flat rate	191,692	Data to Dec. 31, 1909	107	
49=244 H.P.	21=1,100 H.P.	2,968 KW.	..	Lg. 7 & 3, or 6⅔ w. dis.* ; pr. 2½ ; tr. 2⅔	Max. demand & flat rate w. discount	1,669,279	Lighting and traction. *Pb. lg. arc £20 p.a., or 2½d. p.u., inc. (12 C.P.) £1 13s. p.a. Data to Mar. 31, 1910	108	
364=1,670 H.P.	..	6,786 KW.	20	Lg. 5½ to 3 ; pb. lg. arc £22, inc. £3½ p.a.; pr. 1½	Flat rate with discounts	3,875,675	Data to Dec. 1908	109	
110=758 H.P.	See other Table	1,687 KW. (ex. tr.)	11	Lg. 6 & 1½, or 4 ; pb.lg. 2 (arc £20 p.a.)& pr. 6 & 1 ; tr. 2 to 1, sw.1.5	2-rate meter, flat rate, & prept.	2,022,227	Lighting and traction. Data to Mar. 31, 1908	110	
3=12 H.P.	..	72 KW.	196	Lg. 8 ; pb. lg. 4.35 ; pr. 4 to 1 ..	Flat rate & sliding scale	19,229	Data to Sept. 30, 1909..	111	
69=685 H.P.	60=1,320 H.P.	900 KW. (ex. tr.)	23.5	Lg. 4½ ; pr. spl. ; hg. 1½ ; tr. sl. scale	Max. demand, flat rate & sl. scale.	1,442,196	Lighting and traction station. *Resident engineer, A. B. Howden. Data to Dec. 31, 1909	112	
25=50 H.P.	..	157 KW.	41.2	Lg. 7 ; pr. 3	Flat rate with discounts	96,984	*W. H. Smith, resident. Data to Dec. 31, 1908 ..	113	
404=1,708 KW.	144=3,880 H.P.	5,549 KW.	34	Lg. 5½ to 3 ; pb. lg. arc £15, £20 p.a. ; pr. 2½ to 1 ; tr. 1½	Flat rate with discounts	3,179,235	Lighting and traction. Data to April 30, 1910 ..	114	
57=196 H.P.	..	1,197 KW.	8.4	Lg. 6† (arc £4 or 7 & 3) ; pb. lg. arc £15 p.a. ; pr. 3 to 1 ; tr. 1.4	Flat rate with discounts	1,142,000	*Resident Engineer, Wm. Hall. Data to Dec. 31, 1909	115	

263	STOKE NEWINGTON
264	WANDSWORTH
265	WESTMINSTER
266	WESTMINSTER & ST. JAMES
267	WESTMINSTER, HOLBORN & CITY OF L.
268	WOOLWICH, PLUMSTEAD & ELTHAM
269	LONDONDERRY
270	LONG EATON
271	LONG EATON
272	LONGTON
273	LOUGHBOROUGH
274	LOWESTOFT
275	LUDLOW
276	LUTON
277	LYME REGIS
278	LYMINGTON
279	LYNTON & LYNMOUTH
280	MACROOM
281	MAIDENHEAD
282	MAIDSTONE
283	MALTON & NORTON
284	MALVERN
285	MANCHESTER
286	MANSFIELD
287	MARDY (CLAM.)
288	MARGATE & BROADSTAIRS & S. PETERS
289	MARKET DRAYTON
290	MELROSE
291	MELTON MOWBRAY
292	MERTHYR TYDFIL
293	MEVAGISSEY
294	MEXBOROUGH
295	MIDDLESBROUGH
296	MIDDLETON
297	MILFORD-ON-SEA
298	MINEHEAD
299	MIRFIELD
300	MONMOUTH
301	MONTROSE
302	MORECAMBE
303	MORLEY
304	MORPETH
305	MOTHERWELL
306	MUSSELBURGH
307	NELSON
308	NEWBURY
309	NEWCASTLE-EMLYN & DISTRICT
310	NEWCASTLE-ON-TYNE
311	NEWCASTLE-ON-TYNE
312	NEWCASTLE-ON-TYNE AND TYNESIDE
313	NEWCASTLE-UNDER-LYME
314	NEWMARKET AND EXNING
315	NEWPORT & COWES
316	NEWPORT (MON.)
317	NEWQUAY
318	NEWTON ABBOT
319	NORTHALLERTON
320	NORTHAMPTON
321	NORTHWICH
322	NORWICH
323	NOTTINGHAM
324	NUNEATON
325	OBAN
326	OCMORE VALLEY
327	OLDHAM
328	OSWESTRY
329	OULTON BROAD
330	OXFORD
331	PAIGNTON
332	PAISLEY
333	PARTICK
334	PEMBERTON
335	PEMBROKE (DUBLIN)
336	PENARTH
337	PENRITH
338	PERTH
339	PETERBOROUGH
340	PLYMOUTH
341	PONTYPOOL

100	DENNY AND DUNIPACE	Denny Urb. Dunipace Corporation		Merriles											
101	DERBY	Derby Corporation	1898	T. P. Wilmshurst	230 & 460 D.C. 200 A.C. tr. 500	40—, 1-ph. & direct	5,000	2,800	375 A.	£300,000	4,800 KW.	186 arc, 518 cbn.	180=2,850 H.P.	98=2,000	
102	DEVONPORT	Devonport Corporation	1901 tr. 1902 lg.	J. W. Spark	230, 460 & 500	Direct	1,800	981	270 A. lg., 1,000 A. tr.	£123,690	987 KW.	20 arc, 1 inc.	47=122.5 H.P.	76=1,900	
103	DEWSBURY	Dewsbury Corporation	1894	R. H. Campion	220 & 440, tr. 550	Direct	1,050	960	360 A.H.lg., 150 KW. tr.	£58,481	834 KW.	31 arc, 32 cbn., 2 mtl.	138=644 H.P.	28=740	
104	DISS	Suffolk Electricity Supply Co., Ltd.	1898	Napier Prentice	200	Direct	48	28	40 KW.	..	40 KW.	..	5=8 H.P.	..	..
105	DOLLAR	Electric Supply Corporation, Ltd.	1904	K. A. Scott-Moncrieff*	225	Direct	40	17.1	15 KW.	£7,000	64 KW.	26 mtl., 8 Nernst	5=1½ H.P.	..	..
106	DONCASTER	Doncaster Corporation	1900	E. S. Rayner	230 & 460 tr. 500	Direct	1,200	825	75 KW.	£64,501	988 KW.	8 arc, 44 mtl.	79=362 H.P.	50=1,250	
107	DORKING	Dorking Electricity Supply	1904	Henry Joseph	240	Direct	160	168	49 KW.	£38,599	520 KW.	..	53 KW. (inc. htg.)	..	
108	DOVER	Dover Corporation	1895	L. W. Woodman	100 & 200 A.C. 500 D.C.	100—, 1-ph. & direct	1,850	691	77 KW.	£187,194	1,568 KW.	65 arc; inc. & N. = 444 8-C.P.	49=244 H.P.	21=1,100	
109	DUBLIN	Dublin Corporation	1892	Mark Ruddle	lg. 230, pr. 346	50—, 1-ph. & 3-ph.	6,000	3,490	..	£526,000	4,944 KW.	557 arc, 125 mtl.	364=1,670 H.P.	..	
110	DUDLEY	Dudley Corporation	1899	Charles E. Savage	230 & 420 tr. 500	Direct	1,600	1,575	..	£88,000	985 KW.	56 arc, 222 cbn., 30 mtl.	110=753 H.P.	See other Ta	
111	DULVERTON	Dulverton Electric Lighting Co., Ltd.	1904	J. P. Davis (Res.)	230	Direct	60	30	50 KW.	£3,780	62 KW.	35 cbn.	8=12 H.P.	..	
112	DUMBARTON	Electric Supply Corporation, Ltd.	1906	K. A. Scott-Moncrieff*	240 & 480 tr. 500	Direct	940	763	50 KW.	£43,480	191 KW.	..	69=685 H.P.	60=1,620	
113	DUMFRIES	Dumfries Electric Supply Co., Ltd.	1906	Talfourd Ely, Manager*	230	Direct	200	52	125 KW.	£31,586	90 KW.	..	35=50 H.P.	..	
114	DUNDEE	Dundee Corporation	1898	H. Richardson	200 & 400 tr. 550	Direct	3,010	2,800	70 KW.	£179,135	3,221 KW.	83 arc	404=1,708 KW.	144=3,580	
115	EALING	Ealing Corporation	1894	J. Douglas Knight	102 & 204	40—, 1-ph.	1,770	1,182	94 KW.	£205,353	..	72 arc, 804 mtl.	57=196 H.P.	..	
116	EASTBOURNE	Eastbourne Corporation	1882 & 1900*	J. K. Brydges	200	50—, 1-ph.	1,950	1,098	..	£188,494	5,032 KW.	97 arc, 15 mtl.	117=311 H.P.	..	
117	EAST HAM	East Ham Corporation	1901	W. C. Ullmann	240 & 480 tr. 500	Direct	1,925	1,454	..	£125,769	1,687 KW.	202 arc, 109 mtl.	94=253½ H.P.	80=2,000	
118	EBBW VALE	Ebbw Vale Urban District Council	1906	Wm. Horsfall*	230 & 460	Direct	Bulk supply†	145	..	£15,500 approx.	200 KW.	850 mtl.	5=9 H.P.	..	..
119	ECCLES	Eccles Corporation	1898	H. W. Angus	200 A.C., tr. 500 D.C.	50—, 1-ph.	910	277 KW. lg., 211 KW. tr.	tr. 150 KW.	£48,413	540 KW.	27 arc, 303 posts	47=196 H.P.	..	
120	EDINBURCH	Edinburgh Corporation	1895	F. A. Newington	230 A.C., 230 & 460 D.C.	50—, 1-ph. & direct	15,217	11,424	3,600 A H.	..	22,437 KW.	1,990 arc, 272 cbn., 35 mtl.	..	..	
121	EDMONTON	North Metropolitan Electric Power Supply Co.	1907	C. J. Barnett* (Res.)	240 & 415	50—, 3-ph.	250 (trans.)	110	..	£16,830	147.5 KW.	27 flame arc, 4 mtl.	13=109.5 H.P.	..	
122	ELLAND	Elland Urban District Council	1903	A. V. Wardrop	240 & 480	Direct	280	197	150 KW.	£15,468	388 KW.	24 arc, 23 cbn., 56 mtl.	54=238 H.P.	..	
123	ENFIELD	North Metropolitan Electrical Power Distribution Co., Ltd.	1906	A. H. Bennett* (Res.)	240 & 480	Direct	300	127	..	£31,237	263 KW.	..	123.5 KW.	..	
124	EPSOM	Epsom Urban District Council	1902	A. C. Gilling	230 & 460	Direct	550	202	97 KW.	£40,015	16,679 KW.	14 arc, 97 cbn., 323 mtl.	30=75 H.P.	..	
125	ERITH & DISTRICT	Erith Urban District Council	1903	A. Coveney	230, 400 & 200 tr. 500 D.C.	50—3 & 1-ph.	1,350	830	..	£67,885*	913 KW.	19 arc, 511 cbn., 84 N.	110=803 H.P.	34=850 H	
126	EXETER & HEAVITREE	Exeter Corporation	1889*	H. D. Munro	100 A.C., tr. 500 D.C.	50—, 1 & 2 ph., & D.C.	1,500	938	..	£110,000	1,504 KW.	89 arc, 500 mtl.	110=430 H.P.	40=1,000 H	
127	EXMOUTH	Electric Supply Corporation, Ltd.	1904	K. A. Scott-Moncrieff*	225 & 450	Direct	300	69	80 KW.	£28,250	234 KW.	..	14=47 H P.	..	
128	FALKIRK	Falkirk Corporation	1903	J. McMillan	230 & 460	50—, 3-ph. & direct	500	292	150 KW.	£35,000	634 KW.	51 arc, 100 mtl., 10 N.	86=633 H.P.	..	
129	FALMOUTH	Electric Supply Corporation, Ltd.	1906	K. A. Scott-Moncrieff*	240 & 480	Direct	300	102	86 KW.	£29,270	295 KW.	..	18=23½ H.P.	..	
130	FAREHAM	Fareham Urban District Council	1890	A. Blake	105	125—, 1-ph.	135	85	..	£12,888	168 KW.	27 arc, 111 cbn., ½ mtl.	2=½ H.P.	..	..
131	FARNWORTH	Farnworth Urban District Council	1901	A. J. Hutchinson	220 & 440 tr. 500	Direct & 50—, 3-ph.	550	520	160 A.	£41,933	377 KW.	133 arc, 136 inc.	460 H.P.	24=600 H.	
132	FAVERSHAM	Faversham Corporation	1904	G. Sommerville	230 & 460	Direct	270	110	46 KW.	£22,442	150 KW.	10 arc, 8 cbn., 20 mtl., 100 N.	10=30 H.P.	..	
133	FELIXSTOWE & WALTON	Suffolk Electricity Supply Co., Ltd.*	1899	Napier Prentice	200	Direct	200	165	100 KW.	..	300 KW.	40 arc, 10 mtl.	15=22 H.P.	..	
134	FESTINIOG	Yale Electric Power Co.	1900	T. P. O. Yale	220, 230 & 500	Direct	720	..	210 A.H.	£20,000	233 KW.	170 arc & inc.	2=5 H.P.	700 H.P.	
135	FINCHLEY	Finchley Urban District Council	1903	Edward Calvert	250 & 500	Direct	1,750	724	200 KW.	£107,986	2,306 KW.	406 cbn., 497 mtl.	53=217 H.P.	..	
136	FLADBURY	Fladbury Electric Light and Power Co., Ltd.	1900	J. Wm. Wagstaff	220	Direct	40	..	..	..	..	189 inc.	1=4 H.P.	..	
137	FLEETWOOD	Fleetwood Urban District Council*	1900	W. H. Miller	200 & 400	Direct	345	262	40 KW.	£21,500	595 KW.	21 arc, 351 mtl.	54=523 H.P.	..	
138	FOLKESTONE	Folkestone Electricity Supply Co., Ltd.	1898	T. Hesketh	210 & 420	Direct	1,750	1,112	..	£203,628	..	38 arc, 444 mtl.	..	..	
139	FOLKESTONE AND DISTRICT	Folkestone District Electric Light & Power Co., Ltd.	1899	W. G. F. Webster	110	Direct	100	50	10 KW.	£6,000	50 KW.	..	7=15 H.P.	..	..
140	FOOTS CRAY	Foots Cray Electricity Supply Co., Ltd.	1907	A. Wright (Manager)	100	50—, 1-ph.	*	..	..	£10,000	..	..	..	..	
141	FORT WILLIAM	Fort William Electric Lighting Co., Ltd.	1896	I. Reid	150 & 300	Direct	120	100	36 KW.	£11,091	200 KW.	6 arc, 60 inc.	2=4 H.P.	..	..
142	FRINTON-ON-SEA	Frinton-on-Sea & District Electric Light & Power Co., Ltd.	1903	W. Hockley	230 & 460	Direct	60	40	45 KW.	£7,500	83 KW.	..	4=10 H.P.	..	..
143	FROME	Frome Electricity Supply	1904	F. H. Merritt	240 & 480	Direct	525	277	65 KW.	£53,869	298 KW.	10 arc, 258 N.	191=753 H.P.	..	
144	GALWAY	Galway Electric Co., Ltd.	1889	Percy A. Spalding (Eng. & Man.)	120	Direct	145	124	90 KW.	£15,000	203 KW.	20 arc, 16 cbn., 185 mtl.	7=22 H.P.	..	..
145	GATESHEAD, DURHAM, JARROW, ETC.	County of Durham Electrical Pr. Distribution Co., Ltd.	1901	A. S. Esslemont (Manager)*	240 & 480 D.C. 440 A.C.; tr 500	40—, 3-ph. and direct	‡	..	..	£457,681	1,589 KW.	..	23=238 KW. (inc. pr. & htg.)	1,000 KW.	
146	GILLINGHAM	Gillingham Corporation	1903	A. D. Chalmers	230 D.C., 230 & 100 A.C.*	Direct & 50—, 3-ph	950	390	..	£77,907	678 KW.	2 arc, 142 cbn., 373 mtl.	36=97 H.P.	..	
147	GLASCOW	Glasgow Corporation	1892	W. W. Lackie	250 & 500	Direct	37,478	21,585	600 KW.	£1,800,202	27,105 KW.	897 arc	4,292=29,505 H.P.	..	
148	GLOSSOP	Urban Electric Supply Co., Ltd.	1903	C. E. Knowles	240 & 480	Direct	425	290	60 KW.	£52,188	314 KW.	45 Nernst	50=216 H.P.	16=480 H.	
149	GLOUCESTER	Gloucester Corporation	1900	F. H. Corson	220 & 440, tr. 500-550	Direct	2,000	1,090	200 KW.	£91,089	1,940 KW. (inc. pr.)	175 arc, 10 mtl.	..	60=2,100 H.	
150	GODALMING	Urban Electric Supply Co., Ltd.	1902	R. S. Robertson	240 & 480	Direct	380	237	45 KW.	£57,020	740 KW.	10 arc, 244 mtl., 1 N.	28 KW.	65 H.P.	
151	GORSEINON	Gorseinon Electric Light Co., Ltd.	1894	D. Powell	200	Direct	60	55	190 KW.	£4,800	260 KW.	60 inc.	3=6½ H.P.	..	..
152	GOSPORT & ALVERSTOKE	Gosport & Alverstoke Electric Lighting Co., Ltd.	1907	J. Fereday Glenn	240 & 480	Direct	400*	..	..	..	167.4 KW.	..	7=23.64 H.P.	..	
153	GOVAN	Govan Corporation	1900	T. C. Parsons	250 & 500	Direct	1,950	1,446	225 KW.	£130,766	1,772 KW.	215 arc	4,759 H.P.	..	
154	GRANTHAM	Urban Electric Supply Co., Ltd.	1903	J. E. Edmundson	240 & 480	Direct	380	239	650 A.H.	£66,164	838 KW.	..	351 KW.	..	
155	GRASSINGTON	Grassington Electric Supply Co., Ltd.	1909	Chas. Pullen	..	Direct	20	2½	..	£850 (about)	2½ KW.	..	1=½ H.P.	..	
156	GRAVESEND	Gravesend Corporation	1902	C. F. McInnes	230	Direct	1,050	673	630 A.H.	£67,942	..	49 arc, 278 mtl.	10=85 H.P.	40=1,200 H.	
157	GRAYS THURROCK	Grays Thurrock Urban District Council	1901	E. D. Long	230 & 460	Direct	380	160	97 KW.	£23,680	389 KW.	201 inc., 45 N., 19 mtl.	24=72 H.P.	..	
158	GREAT CROSBY AND WATERLOO	Liverpool District Lighting Co., Ltd.	1897	Oswin Hansom	220	Direct	504	325	160 A.	£62,894	1,565 KW.	106 mtl.	15=55 H.P.	..	
159	GREENOCK	Greenock Corporation	1899	J. A. Robertson	250 & 500 D.C. 110 & 220 A.C.	50—, 3-ph. and direct	4,500	2,390	864 KW.	£175,000*	1,961 KW.*	50 arc, 4 mtl., 2 N.	396=5,381* H.P.	82=2,250 H.	
160	GREYSTONES	Greystones Electric Light & Power Co., Ltd.	1910	Raymond F. Fry	100	50—, 1-ph.	60	..	..	£3,500	37 KW.	..	..	..	
161	GRIMSBY & DISTRICT	Grimsby Corporation	1901	W. A. Vignoles	230 & 460	Direct	1,716	1,412	..	£102,317	1,585 KW.	92 arc, 15 cbn., 75 mtl.	169=1,065 H.P.	Max. dem. = 252 KW.	
162	GUERNSEY	Guernsey Electric Light and Power Co., Ltd.	1900	C. Lakin-Smith	210 & 420	Direct	1,090	797	600 KW.	£135,165	891 KW.	20 mtl.	196=1,939 H.P.	..	
163	GUILDFORD	Guildford Electricity Supply Co., Ltd.	1896	H. L. Alderton	215 & 430	Direct	750	350	220 KW.	£58,970	*	9 arc, 5 mtl.	71=386 H.P.	..	
164	HALIFAX	Halifax Corporation	1894	W. M. Rogerson	220 & 460, tr. 550	Direct	4,750	2,870	660 KW.	£258,258	3,466.4 KW.	68 arc, 50 cbn., 88 mtl.	470=2,185 H.P.	See other Table.	
165	HAMILTON	Edmundson's Electricity Corporation (Lessees)	1908	G. Salter	240 & 480	Direct	380	339	150 KW.	£61,571	480 KW.	66 arc, 8 N.	93=430 H.P.	..	
166	HANDSWORTH	Handsworth Urban District Council	1905	F. A. Nixon	240, tr. 500	Direct	1,050	567	148 KW.	£73,400	662 KW.	124 arc, 246 mtl.	98=479 H.P.	8=360 H.P.	
167	HANLEY, STOKE-ON-TRENT	County Borough of Stoke-on-Trent	1894	C. H. Yeaman	100, 200 & 400	100—, 1-ph.	2,000	1,251	..	£115,000 (about)	2,300 KW.	77 arc, 524 cbn.	144=1,101 H.P.	..	
168	HARROGATE	Harrogate Corporation	1897	G. Wilkinson	100 & 200	50—, 1-ph.	2,150	780	..	£123,660	2,828 KW.	8 arc, 11 cbn., 361 mtl.	118=495 H.P. 862 KW.	..	
169	HARROW	Harrow Electric Light and Power Co., Ltd.	1896	J. A. B. Horsley	230 & 440	Direct	854	347	77 KW.	£88,479	1,091 KW. (inc. motors)	..	..	..	
170	HARTLEPOOL	Cleveland & Durham County Elec. Pr. Supply Co., Ltd.	1904	A. B. Gridley (Mgr.) T. Mitchell (Res.)	..	..	..	..	..	..	..	..	..	..	
171	HASTINGS	Hastings Corporation	1882	R. F. Ferguson	200 & 400	100—, 1-ph.	1,750	591	80 KW.	£165,240	1,446 KW.	113 arc, 12 cbn., 2 m'l.	22=81 H.P.	..	
172	HAWICK	Urban Electric Supply Co., Ltd.	1901	A. N. Rye	240 & 480	Direct	600	560	50 KW.	£67,362	558 KW.	12 arc, 8 cbn., 522 mtl.	900 KW.	..	
173	HEBBURN & FELLING	Northern Counties Elec. Spy. Co., Ltd. (Owned by U.D C.)	1908	W. Bates and W. R. Rogers	230 & 460 D.C. 440 A.C.	Direct & A.C.	3,400*	F. 759 H. 1,444	..	..	445 KW.	80 KW.	3,421 KW. (inc. pr. & htg.)	..	
174	HEBDEN BRIDGE	Hebden Bridge Urban District Council	1904	J. W. Garside	240 & 480	Direct	215	125	48 KW.	£12,250	160 KW.	52 mtl.	19=115 H.P.	..	
175	HECKMONDWIKE	Heckmondwike Urban District Council	1902	Geo. H. Carter	230 & 460 tr. 550	Direct	1,000	988	300 KW.	£40,902	879 KW.	10 arc, 149 cbn., 40 mtl.	131=1,121½ H.P.	400 KW.	
176	HENDON	Hendon Electric Supply Co., Ltd.	1908	K. A. Scott-Moncrieff*	240 & 415	50—, 3-ph.	Bulk sply.	206.8	..	£38,000	603 KW.	..	17=73 H.P.	..	
		Corporation	1899	W. T. Kerr	220 & 440	Direct	810	410	50 KW.	£42,000	1,060 KW.	4 arc	109=501 H.P.	..	

..	..	18 KW.	..	Lg. 7, minimum £1 p.a.; pb. lg. 3; pr. 2½ & 2, min. £2 p.a.	Flat rate	4,510	Data to May 15, 1910	100
180=2,850 H.P.	98=2,000 H.P.	8,000 KW.	6.6	Lg. 6 to 2½; pb. lg. inc. 2; pr. 3 to 1; tr. 1½	Max. demand and sliding scale*	4,500,000	Lg. & tr. *Special max. demand rates for lg. and pr.; pb. lg., are £22 (½nt. £10). Data for 1909	101
47=122.5 H.P.	76=1,900 H.P.	2,495 KW.	3.5	Lg. 4*; pb. lg. arc £22½, inc. £3⅜; pr. 1½; tr. 3 to 1.4	Flat, sl. sc., 2-rate, cont., t. sw., spl.	1,651,614	Lighting and traction. *By 2-rate mtr., 4 & 1¾d. Data to Mar. 31, 1910	102
138=644 H.P.	28=740 H.P.	1,950 KW.	8.3	Lg. 5½ & 3, or 4; pb.lg. 5½ & 3; pr. 2½ & 1 (t. sw. 1); tr. 1.6, 1.5 & 1.4	Max. demand and flat rate	1,209,575	Traction supply to Yorks. (W.D.) Elec. Trys., and to Dewsbury & Ossett Trys. Data to Mar. 31, 1910	103
5=8 H.P. ..	..	45 KW. ..	..	Lg. 8 & 6; pr. 6 to 3	Max. demand and flat rate	..	Gas power	104
5=1½ H.P. ..	..	63 KW.	8.9	Lg. 6; pb. lg. 3; pr. 3; hg. 1½	Flat rate & sliding scale	15,874	Overhead mains, bare copper. *Resident engineer, J. B. Mitchell. Data to Dec. 31, 1909	105
79=362 H.P.	50=1,250 H.P.	2,237 KW.	5	Lg. 5, 4½ & 3; pb. lg. £280 p.a.; pr. 2 to 1; tr. 1½	Max. demand and flat rate	1,040,665	Lighting and traction. Data to Mar. 31, 1910	106
53 KW. (inc. htg.)	..	573 KW.	8.1	Lg. 7 & 4, or 6; pr. 2½	Max. demand & flat rate	131,692	Data to Dec. 31, 1909	107
49=244 H.P.	21=1,100 H.P.	2,963 KW.	..	Lg. 7 & 3, or 6¾ w. dis.*; pr. 2½; tr. 2½	Max. demand & flat rate w. discount	1,099,279	Lighting and traction. *Pb. lg. arc £30 p.a., or 2¾d. p.u., inc. (12 C.P.) £1 12s. p.a. Data to Mar. 31, 1910	108
364=1,670 H.P.	..	6,783 KW.	20	Lg. 5½ to 3; pb. lg. arc £22, inc. £3⅜ p.a.; pr. 1½	Flat rate with discounts	3,875,675	Data to Dec. 1909	109
110=753 H.P.	See other Table	1,687 KW. (ex. tr.)	11	Lg. 6 & 1½, or 4; pb.lg. 2 (arc £20 p.a.); pr. 6 & 1; tr. 2 to 1, av.1.3	2-rate meter, flat rate, & prept.	2,022,207	Lighting and traction. Data to Mar. 31, 1908	110
3=12 H.P.	..	72 KW.	100	Lg. 6; pb. lg. £35; pr. 4 to 1 ..	Flat rate & sliding scale	19,200	Data to Sept. 30, 1909..	111
69=685 H.P.	60=1,620 H.P.	800 KW. (ex. tr.)	23.5	Lg. 4½; pr. spl.; hg. 1½; tr. sl. scale	Max. demand, flat rate & sl. scale.	1,449,193	Lighting and traction station. *Resident engineer, A. R. Howden. Data to Dec. 31, 1909	112
35=50 H.P.	..	137 KW.	44.2	Lg. 7; pr. 3	Flat rate, with discounts	26,934	*W. H. Scott, resident. Data to Dec. 31, 1909	113
404=1,708 KW.	144=3,580 H.P.	8,549 KW.	24	Lg. 3½ to 2; pb. lg. arc £15, £12, £8 p.a.; pr. 2½ max.; tr. 1½	Flat rate with dis.; spl. m.d. for pr.	4,719,085	Lighting and traction. Data to April 30, 1908	114
57=196 H.P.	..	4,197 KW.	8.4	Lg. 4½ (arc 4), or 7 & 2; pb. lg. arc £18 14s., inc. £2/1/8*; pr. 1½	Flat rate & max. demand	1,448,770	*Osram lamps supplied free for pb. lg. Decrease in units sold due to mtl. lamps. Data to Mar. 31, 1910	115
117=311 H.P.	..	3,353 KW.	5.7	Lg. 5½, hotels 7 & 2½† (arc 4½); pb. lg. arc £20 8s.p.a.; pr. 2½ to 1	Flat rate, max. demand, & 2-rate mtr.	1,249,719	*Purchased from Company in 1900. †Also double tariff, 5½d. night, 2½d. day. Data to Mar. 31, 1910	116
94=253½ H.P.	80=2,000 H.P.	3,580 KW.	5.4	Lg. 5 & 2, or 3½; pb. lg. arc £18, inc. £3 13/6; pr. 2 & 1½; tr. 1.5	Max. dem., flat, w. dis., sl. scale, cont.	2,826,550	Lighting and traction. Data to Mar. 31, 1909	117
5=9 H.P. ..	..	250 KW.	7.3	Lg. 4½ (slot meters 5); pr. 3 ..	Flat rate, sl. scale & contract	180,000	*R. P. Wilson, Cons. eng. †Bulk supply from Ebbw Vale Steel, Iron & Coal Co. Data to Mar. 31, 1910	118
47=196 H.P.	..	795 KW. (ex. tr.)	..	Lg. 7 & 2, or 4; pb. lg. 1½; pr. 2½ to 1; tr. 1½ to 1	Max. dem., flat, sl. sc., 2-rate mtr. & cont.	1,050,034	Lighting and traction. Tramways leased to Salford Corporation. Data to March 31, 1909	119
..	..	..	..	Lg. 2⅞ w. dis. to 25%; pb. lg. arc £9, inc. £1 to £2 1s., pr. 1½ to ⅞	Flat rate (with discount for lg. only)	14,986,352	Data to May 15, 1910	120
13=109.5 H.P.	..	261.5 KW.	1	Lg. 6 & 2, or 5; pb. lg. arc £19½ p.a.; pr. 4 & 1; htg. 3 & 1	Max. demand & flat rate	155,522	*Eng.-in-Chief, E. T. R. Murray. Data to Dec. 31, 1909	121
54=233 H.P.	..	574 KW.	9.3	Lg. 4; pb. lg. 1.8; pr. 2 to 1	Flat rate & sl. scale	204,567	Data to Mar. 31, 1910	122
123.5 KW. ..	..	386 KW.	10.3	Lg. 7 & 2 or 4½; pr. 4 & 1 (ex. peak 1½); htg. 2	Max. demand & flat rate	163,064	Bulk supply from North Metropolitan E.P.S. Co. *Eng. in chief, E. T. R. Murray. Data to Dec. 31, 1909	123
30=75 H.P....	..	515 KW.	..	Lg. 5⅝ (arc lg. 4); pb. lg. arc £17½ p.a.*; pr. 2½	Flat rate	212,517	*Tantalum, £5; inc., £3⅛ p.a. Data to Mar. 31, 1910 ..	124
110=803 H.P.	34=850 H.P.	2,150 KW.	17.39	Lg. 7 & 2, or 4½ (arc. 2½); pb. lg., arc £20, p.a.; pr. 2 to 1½; tr. 1½	Max. dem., flat, sl. sc., 2-rate, w. dis., t. sw.	1,483,999	Lg. and tr. *Exc. £12,114 for tramway plant. †Inc. (2 × 8 C.P.) £3.17s., N. £5½ p.a. Data to Mar. 31, 1909	125
110=430 H.P.	40=1,000 H.P.	2,123 KW. (ex. tr.)	4	Lg. 4½; pb. lg. contract; pr. 2½ to 1⅔; tr. 1½	Flat rate, contract & sl. scale	1,413,762	Lighting and traction. *By company. Bought by T.C. in 1896. Data to Mar. 31, 1910	126
14=47 H.P....	..	341 KW.	12.2	Lg. 5; pr. 3; hg. 1½	Flat rate with dis.	77,486	*Resident engineer, F. C. Mann. Data to Dec. 31, 1909	127
86=633 H.P.	..	30,258 KW.	15.6	Lg. 4 to 3; pb. lg. arc £15 p.a.; pr. 2 to 1	Flat rate with dis.	480,000 (estimate)	A.C. supply at present taken in bulk. Data to May 15, 1910. (Est.)	128
18=23⅔ H.P.	..	319 KW.	47	Lg. 5; pr. 3; hg. 1½	Flat rate	105,233	*Resident engineer, E. E. Smeeton. Data to Dec. 31, 1909	129
2=½ H.P. ..	..	186 KW.	..	Lg. 6	Flat rate	97,668	.. ..	130
460 H.P. ..	24=600 H.P.	1,336 KW.	5	Lg. 4½ net; pb. lg. arc £16; pr. 2½ to ⅔; tr. 1.5	Flat rate, sl. scale & contract	811,986	Lighting and traction. Supply to Kearsley, and light railway to Pendlebury. Data to Mar. 31, 1909	131
10=30 H.P....	..	200 KW.	..	Lg. 6 to 4½; pr. 3 to 1½	Sliding scale ..	119,689	Gas power. Data to Mar. 1908	132
15=22 H.P.	..	350 KW.	..	Lg. 8 & 6½; pb. lg. 3½; pr. 6 to 4; htg. 3	Flat rate & sliding scale	100,000	* Undertaking leased to Co. by Felixstowe & Walton U.D.C.	133
2=5 H.P. ..	700 H.P. ..	917 KW.	..	Lg. 4; pr. 4; tr. 1½ & 1 ..	Flat rate & contract	..	Lighting & traction. Water power	134
53=217 H.P.	..	2,579 KW.	20	Lg. 6 & 3, or 4⅔; pb. lg. inc. £3 p.a.; pr. 2	Flat rate, max. dem., cont., t. sw. & spl.	938,026	Data to Mar. 31, 1910	135
1=4 H.P. ..	..	..	60 lps. (16 c.p.)	Lg. 6 to 4; pb. lg. & pr., contract	Flat rate & contract	..	Water power	136
54=523 H.P.	..	985 KW.	..	Lg. 6 to 3; pb. lg. 4 incl.; pr. 3 to 1½; htg. 1½	Sliding scale ..	221,000†	*Purchased from Syndicate as from Sept. 30th, 1909. †Half year only. Data to April 1, 1910	137
..	..	3,911 KW.	..	Lg. 6 w. dis.; pb. lg. arc £14 & £18; pr. 3 w. dis.	Flat rate	1,354,879	Supply to Sandgate and Hythe at 2,750 V. D.C. Data to Dec. 31, 1909	138
7=15 H.P. ..	..	217 KW.	10	Lg. 5; pr. 4	Flat rate	10,650	Data for 1908	139
..	..	..	..	.. ..	.. .. ..	..	*Bulk supply	140
2=4 H.P. ..	..	210 KW.	..	Lg. 6½; pb. lg. contract; pr. 1	Flat rate	..	Water power, also part oil	141
4=10 H.P. ..	..	93 KW.	..	Lg. 6; pr. 3 to 2	Flat rate	15,000	Gas power	142
191=753 H.P.	..	996 KW.	4.7	Lg. 7 & 3, or 6; pb. lg. 2½; pr. 4 & 1, or 2½	Max. dem., flat, 2-rate and contract	505,292	Data to Dec. 31, 1909	143
7=22 H.P. ..	..	230 KW.	7.1	Lg. 5; pb. lg. contract; pr. 3 and 2	Flat rate & contract with discounts	208,373	Water power mainly; part gas power. Data to Dec. 31, 1909	144
28=238 KW. (inc. pr. & hg.)	1,000 KW. ..	26,127 KW.	21	Lg. 3⅔ (less 5%); pr. 1½ with discounts	Flat rate with discounts	..	* Merz & McLellan (cons. engs.) †Bulk supply from Co. of Durham Elec. Supply Co., Ltd. Data to Dec. 31, 1909	145
36=97 H.P.	..	778 KW.	– 14.5†	Lg. 7 & 1⅔, or 4½ (slot meter 5½); pb. lg. 1½; pr. 2 to 1½; htg. 1	Max. dem., flat rate, sl. scale & cont.	483,632†	Bulk D.C. supply to Naval Authorities. *3-ph. pr., 173 & 397 V. †Dec. due to mtl-fil. lps. Data to Mar. 31, 1909	146
4,292=29,505 H.P.	..	49,115 KW.	4.48	Lg. 3½ to 2½; pb. lg. arc £12 & £10 p.a.; pr. 1½ to 2* (1908-9)	Max. demand, flat rate, cont. & spl.	34,464,911	3 stn.; at 3, part supply to sub-stn. 25~ 3-ph. at 6,500 V. *Spl. rates to very large pr. cons. Data to May 31, 1909	147
50=216 H.P.	16=480 H.P.	863 KW.	1.75	Lg. 4½; pr. 2½ & spl.; tr. 1½ ..	Flat rate & contract	490,187	Lighting and traction station. Data to end of 1909 ..	148
..	60=2,100 H.P.	3,900 KW.	6.7	Lg. 6 & 2, or 4; pb. lg. 1.8 4; pr. 1½ to 2, and special; tr. 1	Max. dem., flat rate & sl. scale	1,451,880	Lighting and traction. Data to Mar. 31, 1910	149
28 KW. ..	65 H.P. ..	27,549 KW.	28	Lg. 7 & 4, or 6; pb. lg. cont.; pr. 4 & 1½	Max. demand, flat rate and contract	317,077	Data to Dec. 31, 1909	150
3=6½ H.P. ..	..	267 KW. ..	..	Lg. 6 & 4, or 1/8 per c.p. p.a.; pr. 3	Max. demand and contract	4,000	Data for 1909	151
7=33.64 H.P.	..	185 KW. ..	82.7	Lg. 4½; pr. 2, 1½ & 1	Flat rate with dis.	43,102	*Current supplied in bulk by Gosport & Fareham Tramways Station at 1½d. per unit. Data to Dec. 31, 1909	152
4,759 H.P. ..	..	5,890 KW.	18.3	Lg. 6 & 1, or 3½ & 3; pb. lg. arc £14 p.a.; pr. 2 to 1⅜	Max. demand, flat rate & sliding scale	2,351,379 (estimated)	Data to May 15, 1909	153
351 KW. ..	..	1,189 KW.	1	Lg. 7 & 3, or 5; pr. 4 & 1, or 2½, and special	Max. dem., flat, 2-rate & contract	315,764	Hire-purchase over 3, 5 or 7 years. Data to Dec. 31, 1909	154
1=1½ H.P. ..	..	2½ KW. ..	*	Lg. 5; pr. 1½; htg. 1½	Flat rate	*	Water power. *First year. Data to April 21, 1910 ..	155
10=85 H.P.	40=1,200 H.P.	567 KW.	..	Lg. 7 & 1½, or 4; pb. lg. arc £20 & £10, inc. £3 14; pr. 2-rate, 5 & 1, or 1½; tr. 2 to 1½	Max. demand, flat, 2-rate m. & cont.	981,180	Lighting and traction. Data to Mar. 31, 1909	156
24=72 H.P.	..	427 KW.	..	Lg. 5 to 3; pb. lg. 3; pr. 2½ ..	Sliding scale & flat rate	211,580	.. ..	157
15=55 H.P....	..	1,680 KW.	..	Lg. 5 to 3½; pb. lg. 5, less 33⅓%; pr. 1½, or 2 to 1½	Flat rate & sliding scale	868,825	Data to Dec. 31, 1909	158
396=5,381* H.P.	82=2,250 H.P.	10,086 KW.*	11	Lg. 4 & 1½ or fixed charge + 1d. per unit; tr. 1½ to 0.85	Max. dem., flat rate, sl. scale & cont.	5,020,000*	Lighting and traction. *Data to June 30, 1910 (estd.) ..	159
..	..	37 KW. ..	..	Lg. 6; pr. 6	Flat rate	*	*Supply started April, 1910	160
162=1,065 H.P.	Max. dem. = 252 KW.	3,468 KW.* (ex. tr.)	..	Lg. 3½; pb. lg. arc £20 p.a.†; pr. 2½ to 1 (time sw. 1d.); tr. 1½ to 1½	Flat rate, sl. scale, cont. w. dis. & t. sw.	2,350,389	Lg. & tr. (supply to Tram. Co.). *Also bulk supply to G.C. Ry. Docks & Admlty. †Inc. £2¾. Data to Mar. 31, 1910	161
196=1,929 H.P.	..	2,973 KW.	3.72	Lg. 7 & 3, or 6, 5½; pb. lg. inc. £2½ p.a.; pr. 4 & 1½, or 2½, 2; htg. 2	Max. dem., flat rate, cont., t. sw. & spl.	1,294,612	Two stations, one gas power. 2,600 V. D.C. to sub-stations. Data to Dec. 31, 1909	162
71=386 H.P.	..	*	..	Lg. 7 to 4, less 1d. discount; pb. lg. cont.; pr. 4 to 2, less 1d. dis.	Flat rate, sl. sc., 2-rate mtr. & cont.	890,488	Part oil power (Diesel engines). *Number of lamps connected not registered. Data to Dec. 31, 1909	163
470=2,185 H.P.	See other Table.	5,759 KW.	5.6	Lg. 4 to 3; pb. lg. 3; pr. 2 to ⅝; hg. 2; tr. 1	Flat rate & sl. sc.; 2-rate & t. sw.	5,477,869	Lighting and traction (A.C. to sub-stations, 3-ph., 5,500 V., 25~). Data to Mar. 31, 1910	164
98=480 H.P.	..	988 KW. ..	26.9	Lg. 4; pr. 2 & 1	Max. demand & flat rate	993,596	Data to Dec. 31, 1907	165
98=479 H.P.	3=360 H.P.	1,462 KW.	24.8	Lg. 4; pb. lg. £12 p.a.; pr. & tr. 2 & 1½	Flat rate with dis.	855,000 (approx.)	Lighting and traction. Data to Mar. 31, 1910	166
144=1,101 H.P.	..	3,845 KW.	18.9	Lg. 6, 4½, 3, 2 & 1; pb. lg. average 1.8 inclusive; pr. 3, 1, ⅝ & ⅓	Max. dem., 2-rate, cont. & time sw.	1,841,214 (approx.)	Small auxiliary plant at destructor works. Data approx. to April 1910, otherwise to Mar. 31, 1910	167
118=495 H.P. 863 KW.	..	3,190 KW.	4.8	Lg. 6 & 2, or 5; pb. lg. 1½; pr. 5, 2 & 1½; htg. 1½	Max. dem., flat rate & cont. with dis.	1,120,287*	*Reduction on total units sold, owing to metallic filament lamps. Data for year ending Dec., 1909	168
..	..	1,091 KW.	5.1	Lg. inc. 7 & 4½, arc 7 & 1; pr. 4 & 1½ (restricted hrs. 1½); ch. 6	Max. demand ..	410,276	Data to Dec. 31, 1909	169
..	..	..	..	.. ..	.. .. ..	..	Order transferred to the Cleveland and Durham Power Co. No separate returns published	170
22=81 H.P.	..	1,579 KW.	4	Lg. 6½ with dis.; pb. lg. arc £25, p.a.; pr. 2	Flat rate with discounts	755,372	Data to Mar. 31, 1909	171
900 KW. ..	..	1,491 KW.	18	Lg. 5 & 3, or 4 (mills); pb. lg. about 1.25; pr. 2½ to 0.9	Max. dem., flat rate, sl. scale & cont.	958,444	400-KW. extension in hand. Data to Dec. 31, 1909 ..	172
3,421 KW. (inc. pr. & htg.)	..	3,906 KW.	..	Lg. 8½; pr. 1½ with discounts ..	Flat rate with dis.	..	*Also bulk supply fm. C. of D. Co. Cons. Engrs. Merz & McLellan; Man. C. W. Fairweather. Data to Dec. 31, '09	173
29=115 H.P.	..	167 KW. ..	12	Lg. 5; pb. lg. 3; pr. 2	Flat rate with discounts	89,000	Data to Mar. 31, 1910	174
181=1,121⅔ H.P.	400 KW. ..	1,336 KW.	20	Lg. 4; pb. lg. 1.73; pr. 3 to .75; tr. 3	Flat rate, sl. scale w. dis. & special	893,981	Lighting and traction. Data to Mar. 31, 1910	175
17=72 H.P. ..	..	736 KW. ..	88	Lg. 5; pr. 1½; hg. 1½	Flat rate	206,871	*Engineer & Manager, B. G. Drummond. Data to Dec. 31, 1909	176
109=501 H.P.	..	1,468 KW.	12.5	Lg. 4½; pr. 2 to 1, with dis.	Flat rate, Scale of	400,000	Data to Mar. 28, 1910	177

328	OSWESTRY .. ..
329	OULTON BROAD ..
330	OXFORD .. .. ..
331	PAIGNTON .. ..
332	PAISLEY .. .. ..
333	PARTICK .. .. ..
334	PEMBERTON .. ..
335	PEMBROKE (DUBLIN) ..
336	PENARTH .. ..
337	PENRITH .. ..
338	PERTH .. .. ..
339	PETERBOROUCH ..
340	PLYMOUTH .. ..
341	PONTYPOOL .. ..
342	PONTYPRIDD .. ..
343	PORTPATRICK ..
344	PORTSMOUTH .. ..
345	PRESCOT & DISTRICT
346	PRESTON .. ..
347	PUDSEY .. .. ..
348	QUEENSTOWN .. ..
349	RADCLIFFE .. ..
350	RAMSCATE .. ..
351	RATHMINES .. ..
352	RAWMARSH .. ..
353	READING .. .. ..
354	REDDITCH .. ..
355	REICATE .. .. ..
356	RHYL .. .. ..
357	RICHMOND (SURREY) ..
358	ROCHDALE .. ..
359	ROSS .. .. ..
360	ROTHERHAM .. ..
361	ROTHESAY .. ..
362	ROTTINGDEAN .. ..
363	ROUNDHAY .. ..
364	RUGBY .. .. ..
365	RUGBY SCHOOL ..
366	RYDE & ST. HELENS ..
367	ST. ALBANS .. ..
368	ST. ANDREWS ..
369	ST. ANNES-ON-SEA ..
370	ST. AUSTELL .. ..
371	ST. HELENS .. ..
372	SALE .. .. ..
373	SALISBURY .. ..
374	SALTBURN .. ..
375	SCARBOROUCH ..
376	SHANKLIN & SANDOWN
377	SHEERNESS AND QUEENBOROUCH
378	SHEFFIELD .. ..
379	SHILDON .. .. ..
380	SHIPLEY .. .. ..
381	SHREWSBURY .. ..
382	SLEAFORD .. ..
383	SLOUCH & DATCHET
384	SMETHWICK & OLDBURY
385	SOUTHAMPTON ..
386	SOUTHEND-ON-SEA ..
387	SOUTHPORT .. ..
388	SOUTH SHIELDS ..
389	SPENNYMOOR .. ..
390	STAFFORD .. ..
391	STALYBRIDGE .. ..
392	STAMFORD .. ..
393	STIRLING .. ..
394	STOCKPORT .. ..
395	STOCKTON-ON-TEES ..
396	STOKE-ON-TRENT & FENTON
397	STOWMARKET .. ..
398	STRATFORD-ON-AVON
399	STRETFORD .. ..
400	SUNDERLAND .. ..
401	SURBITON .. ..
402	SUTTON, CARSHALTON, WALLINGTN & CHEAM
403	SUTTON COLDFIELD ..
404	SWANSEA .. ..

125	ERITH & DISTRICT	Erith Urban District Council	1903	A. Coveney	350, 400 & 200 tr. 500 D.C.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	11 arc, 311 cbn., 84 N.	110=809 H.P.	34=850
126	EXETER & HEAVITREE	Exeter Corporation	1889*	H. D. Munro	100 A.C., tr. 500 D.C.	60~, 1 & 2 ph., & D.C.	1,500	988	..	£110,000	1,504 KW.	39 arc, 500 mtl.	110=480 H.P.	40=1,000
127	EXMOUTH	Electric Supply Corporation, Ltd.	1904	K. A. Scott-Moncrieff*	225 & 450	Direct	300	69	80 KW.	£28,250	234 KW.	..	14=47 H P.	..
128	FALKIRK	Falkirk Corporation	1903	J. McMillan	230 & 460	50~, 3-ph. & direct	500	292	150 KW.	£35,000	634 KW.	51 arc, 100 mtl., 10 N.	86=633 H.P.	..
129	FALMOUTH	Electric Supply Corporation, L'd.	1906	K. A. Scott-Moncrieff*	240 & 480	Direct	300	102	86 KW.	£22,270	295 KW.	..	18=23¾ H.P.	..
130	FAREHAM	Fareham Urban District Council	1890	A. Blake	105	125~, 1-ph.	135	85	..	£12,888	168 KW.	37 arc, 111 cbn., 9 mtl.	2=1½ H.P.	..
131	FARNWORTH	Farnworth Urban District Council	1901	A. J. Hutchinson	220 & 440 tr. 500	Direct & 50~, 3-ph.	550	520	160 A.	£41,933	377 KW.	133 arc, 136 inc.	460 H.P.	24=600
132	FAVERSHAM	Faversham Corporation	1904	G. Sommerville	230 & 460	Direct	270	110	46 KW.	£23,442	150 KW.	10 arc, 8 cbn., 20 mtl., 100 N.	10=90 H.P.	..
133	FELIXSTOWE & WALTON	Suffolk Electricity Supply Co., Ltd.*	1899	Napier Prentice	200	Direct	200	165	100 KW.	..	300 KW.	40 arc, 10 mtl.	15=22 H.P.	..
134	FESTINIOG	Yale Electric Power Co.	1900	T. P O. Yale	220, 230 & 500	Direct	730	..	210 A.H.	£20,000	233 KW.	170 arc & inc.	2=5 H.P.	700 H.P.
135	FINCHLEY	Finchley Urban District Council	1903	Edward Calvert	250 & 500	Direct	1,750	724	200 KW.	£107,986	2,306 KW.	406 cbn., 497 mtl.	53=217 H.P.	..
136	FLADBURY	Fladbury Electric Light and Power Co., Ltd.	1900	J. Wm. Wagstaff	220	Direct	40	..	..	..	..	189 inc.	1=4 H.P.	..
137	FLEETWOOD	Fleetwood Urban District Council*	1900	W. H. Miller	200 & 400	Direct	845	262	40 KW.	£21,500	595 KW.	21 arc, 351 mtl.	54=523 H.P.	..
138	FOLKESTONE	Folkestone Electricity Supply Co., Ltd.	1898	T. Hesketh	210 & 420	Direct	1,750	1,112	..	£203,628	..	38 arc, 444 mtl.	..	..
139	FOLKESTONE AND DISTRICT	Folkestone District Electric Light & Power Co., Ltd.	1899	W. G. F. Webster	110	Direct	100	50	10 KW.	£6,000	50 KW.	..	7=15 H.P.	..
140	FOOTS CRAY	Foots Cray Electricity Supply Co., Ltd.	1907	A. Wright (Manager)	100	50~, 1-ph.	*	..	..	£10,000	..	..	..	..
141	FORT WILLIAM	Fort William Electric Lighting Co., Ltd.	1896	I. Reid	150 & 300	Direct	120	190	30 KW.	£11,091	200 KW.	6 arc, 60 inc.	2=4 H.P.	..
142	FRINTON-ON-SEA	Frinton-on-Sea & District Electric Light & Power Co., Ltd.	1903	W. Hockley	230 & 460	Direct	60	40	45 KW.	£7,500	83 KW.	..	4=10 H.P.	..
143	FROME	Frome Electricity Supply	1904	F. H. Merritt	240 & 480	Direct	525	277	65 KW.	£53,869	298 KW.	10 arc, 258 N.	191=753 H.P.	..
144	CALWAY	Galway Electric Co., Ltd.	1889	Percy A. Spalding (Eng. & Man.)	120	Direct	145	124	90 KW.	£15,000	203 KW.	20 arc, 16 cbn., 135 mtl.	7=22 H.P.	..
145	CATESHEAD, DURHAM, JARROW, ETC.	County of Durham Electrical Pr. Distribution Co., Ltd.	1901	A. S. Esslemont (Manager)*	240 & 480 D.C. 440 A.C.; tr500	40~, 3-ph. and direct	†	..	..	£457,681	1,889 KW.	..	23=238 KW. (inc. pr. & hg.)	1,000 KW
146	CILLINCHAM	Gillingham Corporation	1903	A. D. Chalmers	220 D.C., 230 & 100 A.C.*	Direct & 50~, 3-ph	950	390	..	£77,907	678 KW.	2 arc, 142 cbn., 373 mtl.	36=97 H.P.	..
147	CLASCOW	Glasgow Corporation	1892	W. W. Lackie	250 & 500	Direct	37,478	21,585	600 KW.	£1,800,202	27,105 KW.	887 arc	4,292=29,505 H.P.	..
148	CLOSSOP	Urban Electric Supply Co., Ltd.	1903	C. E. Knowles	240 & 480	Direct	425	290	60 KW.	£52,188	314 KW.	45 Nernst	50=216 H.P.	16=480
149	CLOUCESTER	Gloucester Corporation	1900	F. H. Corson	220 & 440, tr. 500-550	Direct	2,000	1,090	200 KW.	£91,089	1,940 KW. (inc. pr.)	175 arc, 10 mtl.	..	60=2,100
150	CODALMINC	Urban Electric Supply Co., Ltd.	1902	R. S. Robertson	240 & 480	Direct	380	237	45 KW.	£57,020	740 KW.	10 arc, 244 mtl., 1 N.	28 KW.	65 H.P.
151	CORSEINON	Gorseinon Electric Light Co., Ltd.	1894	D. Powell	200	Direct	60	55	190 KW.	£4,800	260 KW.	60 inc.	3=6½ H.P.	..
152	COSPORT & ALVERSTOKE	Gosport & Alverstoke Electric Lighting Co., Ltd.	1907	J. Fereday Glenn	240 & 480	Direct	400*	..	..	..	167.4 KW.	..	7=23.64 H.P.	..
153	COVAN	Govan Corpcration	1900	T C. Parsons	250 & 500	Direct	1,950	1,446	225 KW.	£180,766	1,772 KW.	215 arc	4,759 H.P.	..
154	CRANTHAM	Urban Electric Supply Co., Ltd.	1903	J. E. Edmundson	240 & 480	Direct	380	239	650 A.H.	£66,164	888 KW.	..	351 KW.	..
155	CRASSINCTON	Grassington Electric Supply Co., Ltd.	1909	Chas. Pullen	..	Direct	20	2½	..	£850 (about)	2½ KW.	..	1=½ H.P.	..
156	CRAVESEND	Gravesend Corporation	1902	C. F. McInnes	230	Direct	1,050	678	630 A.H.	£67,942	..	49 arc, 278 mtl.	10=85 H.P.	40=1,200
157	CRAYS THURROCK	Grays Thurrock Urban District Council	1901	E. D. Long	230 & 460	Direct	380	160	97 KW.	£23,680	339 KW.	201 inc., 45 N., 19 mtl.	24=72 H.P.	..
158	CREAT CROSBY AND WATERLOO	Liverpool District Lighting Co., Ltd.	1897	Oswin Hansom	220	Direct	504	325	160 A.	£62,894	1,565 KW.	106 mtl.	15=55 H.P.	..
159	CREENOCK	Greenock Corporation	1899	J. A. Robertson	250 & 500 D.C.	50~, 3-ph. and direct	4,500	2,390	364 KW.	£175,000*	1,981 KW.*	50 arc, 4 mtl., 2 N.	396=5,881* H.P.	82=2,250
160	CREYSTONES	Greystones Electric Light & Power Co., Ltd.	1910	Raymond F. Fry	110 & 220 A.C. 100	50~, 1-ph.	60	..	..	£3,500	37 KW.	..	..	..
161	CRIMSBY & DISTRICT	Grimsby Corporation	1901	W. A. Vignoles	230 & 460	Direct	1,716	1,412	..	£102,317	1,585 KW.	82 arc, 15 cbn., 75 mtl.	162=1,065 H.P.	Max. dem. 252 KW.
162	CUERNSEY	Guernsey Electric Light and Power Co., Ltd.	1900	C. Lakin-Smith	210 & 420	Direct	1,090	797	600 KW.	£135,165	891 KW.	20 mtl.	196=1,929 H.P.	..
163	CUILDFORD	Guildford Electricity Supply Co., Ltd.	1896	H. L. Alderton	215 & 430	Direct	750	350	220 KW.	£58,970	*	9 arc, 5 mtl.	71=386 H.P.	..
164	HALIFAX	Halifax Corporation	1894	W. M. Rogerson	230 & 460, tr. 550	Direct	4,750	2,870	650 KW.	£258,258	3,466.4 KW.	63 arc, 50 cbn., 88 mtl.	470=2,185 H.P.	See other Table.
165	HAMILTON	Edmundson's Electricity Corporation (Lessees)	1908	G. Salter	240 & 480	Direct	380	339	150 KW.	£61,571	480 KW.	66 arc, 8 N.	98=480 H.P.	..
166	HANDSWORTH	Handsworth Urban District Council	1905	F. A. Nixon	240, tr. 500	Direct	1,050	567	143 KW.	£73,400	652 KW.	124 arc, 246 mtl.	93=479 H.P.	3=360 H.P.
167	HANLEY, STOKE-ON-TRENT	County Borough of Stoke-on-Trent	1894	C. H. Yeaman	100, 200 & 400	100~, 1-ph.	2,000	1,251	..	£115,000 (about)	2,300 KW.	77 arc, 524 cbn.	144=1,101 H.P.	..
168	HARROCATE	Harrogate Corporation	1897	G. Wilkinson	100 & 200	50~, 1-ph.	2,150	780	..	£123,660	2,828 KW.	8 arc, 11 cbn., 361 mtl.	118=495 H.P. 362 KW.	..
169	HARROW	Harrow Electric Light and Power Co., Ltd.	1896	J. A. B. Horsley	220 & 440	Direct	854	347	77 KW.	£88,479	1,091 KW. (inc. motors)	..	..	..
170	HARTLEPOOL	Cleveland & Durham County Elec. Pr. Supply Co., Ltd.	1904	A. B. Gridley (Mgr.) T. Mitchell (Res.)	..	..	..	..	..	..	..	..	..	..
171	HASTINCS	Hastings Corporation	1882	R. F. Ferguson	200 & 400	100~, 1-ph.	1,750	591	30 KW.	£165,240	1,446 KW.	113 arc, 12 cbn., 2 m'l.	22=81 H.P.	..
172	HAWICK	Urban Electric Supply Co., Ltd.	1901	A. N. Rye	240 & 480	Direct	600	569	50 KW.	£67,362	553 KW.	12 arc, 3 cbn., 522 mtl.	900 KW.	..
173	HEBBURN & FELLING	Northern Counties Elec. Spy. Co., Ltd. (Owned by U.D C.)	1908	W. Bates and W. R. Rogers	230 & 460 D.C. 440 A.C.	Direct & A.C.	3,400*	F. 759 H. 1,444	..	..	443 KW.	39 KW.	3,421 KW. (inc. pr. & htg.)	..
174	HEBDEN BRIDCE	Hebden Bridge Urban District Council	1904	J. W. Garside	240 & 480	Direct	215	125	48 KW.	£12,250	160 KW.	52 mtl.	29=115 H.P.	..
175	HECKMONDWIKE	Heckmondwike Urban District Council	1902	Geo. H. Carter	230 & 460 tr. 550	Direct	1,000	988	300 KW.	£40,802	379 KW.	10 arc, 149 cbn., 49 mtl.	131=1,121¾ H.P.	400 KW.
176	HENDON	Hendon Electric Supply Co., Ltd.	1908	K. A. Scott-Moncrieff*	240 & 415	50~, 3-ph.	Bulk sply.	206.8	..	£38,600	593 KW.	..	17=72 H.P.	..
177	HEREFORD	Hereford Corporation	1899	W. T. Kerr	220 & 440	Direct	610	410	50 KW.	£42,000	1,090 KW.	4 arc	109=501 H.P.	..
178	HERTFORD	North Metropolitan Elec. Pr. Distribution Co., Ltd.	1901	J. M. Bowman (Res.)*	230 & 460	Direct	†	158	40 KW.	£11,477	355 KW.	9 arc, 19 mtl.	91½ KW.	..
179	HESTON & ISLEWORTH	Heston and Isleworth Urban District Council	1904	Percy E. Rycroft	240 & 480	Direct	500	405	200 KW.	£59,434	791 KW.	51 arc, 300 mtl.	56=337 H.P.	..
180	HEXHAM	Hexham and District Electric Supply Co., Ltd.	1906	Wilfred Hall (Cons. Eng.)	120 lg., 220 & 440 pr.	40~, 3-ph.	100	36	..	£8,484	52 KW.	..	9=43½ H.P.	..
181	HEYWOOD	Heywood Corporation	1900	Jas. Stott	200 & 400 tr. 500	Direct	900	160	100 KW.	£26,936	251 KW.	45 mtl.	75=325 H.P.	16=400 H.P.
182	HICH BARNET	North Metropolitan Elec. Pr. Distribution Co., Ltd.	1900	H. Bernard Sale (Res.)*	230 & 460	Direct	†	300	..	£14,983	370 KW.	18 arc, 177 mtl.	..	150.5 KW.
183	HIGH WYCOMBE	Wycombe (Borough) Electric Light & Power Co., Ltd.	1898	W. E. Brandreth	210 & 420	Direct	880	580	110 KW.	£101,017	958 KW.	12 arc, 20 mtl., 355 N.	150=555 H.P.	..
184	HINDHEAD AND DIST.	Hindhead & District Electric Light Co., Ltd.	1900	T. B. Reader	220 D.C., 100 A.C.	Direct & 50 ~, 1-ph.	160	80	70 KW.	£19,956	250 KW.	2 mtl.	9=28½ H.P.	..
185	HITCHIN	Electric Supply Corporation, Ltd.	1906	K. A. Scott-Moncrieff*	240 & 480	Direct	200	65.5	77 KW.	£19,150	208 KW.	..	14=17½ H.P.	..
186	HOLYHEAD	Holyhead Urban District Council	1904	P. Williams	200 & 400	Direct	220	149	240 KW.	£21,405	212 KW.	9 arc, 452 cbn.	8=5½ H.P.	..
187	HONLEY	Honley Urban District Council	1904	Harry Marsden (Gen. Man.)	200	Direct	75	26	..	£3,100	80 KW.	2 arc, 99 inc.	3=6 H.P.	..
188	HORNSEY	Hornsey Corporation	1903	N. Staniland	240 & 480	Direct	1,300	877	250 KW.	£150,092	2,768 KW. inc. pr.	58 arc, 138 mtl.	36 KW.	..
189	HORSHAM	Horsham Urban District Council	1902	J. B. Morgan	230 & 460	Direct	400	191	115 KW.	£31,231	514 KW.	21 arc, 290 mtl	17=36 H.P.	..
190	HOUCHTON-LE-SPRINC	Houghton-le-Spring & Dist. Electric Lighting Co., Ltd.	1907	..	220	40~, 3-ph.	Bulk supply*	..	..	..	96 KW.	24 mtl.	2,220 KW. (inc. collieries	..
191	HOVE	Hove Electric Lighting Co., Ltd.	1892	C. B. Smith	220	Direct	1,608	1,007	36 KW.	£167,879	3,448 KW.	..	135=438 KW.	..
192	HOVE (ALDRINCTON)	Hove Corporation	1905	H. H. Scott (Boro' Surveyor)	220 & 440	Direct	*	167	..	£9,290	167 KW.	40 mtl.	Rad. =176 KW. 8=15 H.P.	..
193	HOYLAKE & W. KIRBY	Hoylake & W. Kirby Urban District Council	1901	C. J. Turner	230	50~, 1-ph.	625	330	300 A.H.	£52,019	1,341 KW.	3 arc, 429 cbn., 50 mtl., 8 N.	10=30 H.P.	..
194	HUDDERSFIELD	Huddersfield Corporation	1898	A. B. Mountain	100, 200, & 400*	100~, 1 ph. 50~, 3-ph.	5,750 3-ph. 8,150 1-ph.	2,870	..	£220,454	5,317 KW.	99 arc, 48 inc. 4 N.	513=3,497 H.P.	..
195	HULL	Hull Corporation	1898	H. Bell	220 & 440	Direct	6,454	4,790	488 KW.-hrs.	£354,977	6,657 KW.	28 arc, 42 Nernst	601=6,885 H.P.	..
196	ILFORD	Ilford Urban District Council	1901	A. H. Shaw	230 & 460 tr. 500	Direct	3,600	1,665	200 KW.	£173,101	2,731 KW.	106 arc, 296 cbn., 1,300 mtl.	115=644 H.P.	52=1,900 H.P.
197	ILFRACOMBE	Ilfracombe Electric Light & Power Co., Ltd.	1903	H. J. F. Stewart	240 & 480	Direct	330	179	8½ KW.	£35,180	505 KW.	..	43=103 H.P.	..
198	ILKESTON	Ilkeston Corporation	1903	H. P. Stokes	230 & 460 tr. 500	Direct	*	..	..	..	1,020 KW.	21 arc, 193 cbn., 8 mtl.	..	26=650 H.P.
199	INCLETON (YORKS)	Ingleton Electric Lighting & Power Co., Ltd.	1900	D. Tattersall	100 & 200	Direct	29	22	12½ KW.	£7,000	63 KW.	37 inc.	6=20 H.P.	..
200	INVERNESS	North of Scotland Electric Light & Power Co., Ltd.	1905	E. J. Williams	240 & 480	Direct	330	223	100 KW.	£34,340	264 KW.	..	63=332 H.P.	..
201	[illegible]	Ipswich Corporation	1903	F. Ayton	230 & 460	Direct	1,511	1,050	210 KW.	£89,041	1,884 KW.	14 mtl.	278=911 H.P.	73=1,800 H.P.
[illegible]		Corporation	1903	K. A. Scott-Moncrieff*	225 & 450	Direct	66	30	35 KW.	£13,000	88 KW.	9 arc, 12 cbn.,	7=24 H.P.	..

110=809 H.P.	34=850 H.P.	2,150 KW.	17.39	Lg. 7 & 2, or 4½ (arc. 2½); pb. lg., arc £20, p.a.; pr. 2 to 1½; tr. 1½	Max. dem., flat, sl. sc., 2-rate, w. dis., t. sw.	1,138,999	Lg. and tr. *Exc. £12,114 for tramway plant. †Inc. (9 × 8 C.P.) £3.17s., N. £5½, p.a. Data to Mar. 31, 1909	125	
110=430 H.P.	40=1,000 H.P.	2,123 KW. (ex. tr.)	4	Lg. 4½; pb. lg. contract; pr. 2½ to 1½; tr. 1½	Flat rate, contract & sl. scale	1,418,762	Lighting and traction. *By company. Bought by T.C. in 1896. Data to Mar. 31, 1910	126	
14=47 H.P. ..	..	341 KW.	12.2	Lg. 5; pr. 3; hg. 1½	Flat rate with dis.	77,486	*Resident engineer, F. C. Mann. Data to Dec. 31, 1909	127	
86=633 H.P.	..	30,258 KW.	15.6	Lg. 4 to 3; pb. lg. arc £15 p.a.; pr. 2 to 1	Flat rate with dis.	480,000 (estimate)	A.C. supply at present taken in bulk. Data to May 15, 1910. (Est.)	128	
18=23½ H.P.	..	319 KW.	47	Lg. 5; pr. 3; hg. 1½	Flat rate	105,233	*Resident engineer, E. E. Smeeton. Data to Dec. 31, 1909	129	
2=½ H.P. ..	..	186 KW.	..	Lg. 6	Flat rate	97,668	.. ..	130	
460 H.P. ..	24=600 H.P.	1,936 KW.	5	Lg. 4½ net; pb. lg. arc £16; pr. 2½ to ¼; tr. 1.5	Flat rate, sl. scale & contract	811,986	Lighting and traction. Supply to Kearsley, and light railway to Pendlebury. Data to Mar. 31, 1909	131	
10=30 H.P. ..	..	200 KW.	..	Lg. 6 to 4½; pr. 3 to 1½ . ..	Sliding scale ..	119,689	Gas power. Data to Mar. 1908	132	
15=22 H.P.	..	850 KW.	..	Lg. 8 & 6½; pb. lg. 3½; pr. 6 to 4; htg. 3	Flat rate & sliding scale	100,000	* Undertaking leased to Co. by Felixstowe & Walton U.D.C.	133	
2=5 H.P. ..	700 H.P. ..	917 KW.	..	Lg. 4; pr. 4; tr. 1½ & 1 ..	Flat rate & contract	..	Lighting & traction. Water power	134	
53=217 H.P.	..	2,579 KW.	20	Lg. 6 & 3, or 4½; pb. lg. inc. £3 p.a.; pr. 2	Flat rate, max. dem., cont., t. sw. & spl.	938,026	Data to Mar. 31, 1910	135	
1=4 H.P. ..	..	..	60 lps. (16 c.p.)	Lg. 6 to 4; pb. lg. & pr., contract	Flat rate & contract	..	Water power	136	
54=523 H.P.	..	985 KW.	..	Lg. 6 to 3; pb. lg. 4 incl.; pr. 3 to 1½; htg. 1½	Sliding scale ..	221,000†	*Purchased from Syndicate as from Sept. 30th, 1909. †Half year only. Data to April 1, 1910	137	
..	..	3,911 KW.	..	Lg. 6 w. dis.; pb. lg. arc £14 & £18; pr. 3 w. dis.	Flat rate	1,354,879	Supply to Sandgate and Hythe at 2,750 v. D.C. Data to Dec. 31, 1909	138	
7=15 H.P. ..	..	217 KW.	10	Lg. 5; pr. 4	Flat rate	10,650	Data for 1909	139	
..	..	..	..	.. ..	.. .. ..	..	*Bulk supply	140	
2=4 H.P. ..	..	210 KW.	..	Lg. 6½; pb. lg. contract; pr. 1	Flat rate	..	Water power, also part oil	141	
4=10 H.P. ..	..	93 KW.	..	Lg. 6; pr. 3 to 2	Flat rate	15,000	Gas power	142	
191=753 H.P.	..	996 KW.	4.7	Lg. 7 & 3, or 6; pb. lg. 2½; pr. 4 & 1, or 2½	Max. dem., flat, 2-rate and contract	505,292	Data to Dec. 31, 1909	143	
7=22 H.P. ..	..	230 KW.	7.1	Lg. 5; pb. lg. contract; pr. 3 and 2	Flat rate & contract with discounts	208,373	Water power mainly; part gas power. Data to Dec. 31, 1909	144	
23=238 KW. (inc. pr. & hg.)	1,000 KW. ..	26,127 KW.	21	Lg. 3½ (less 5%); pr. 1½ with discounts	Flat rate with discounts	..	* Merz & McLellan (cons. engs.) †Bulk supply from Co. of Durham Elec. Supply Co., Ltd. Data to Dec. 31, 1909	145	
36=97 H.P.	..	778 KW.	– 14.5†	Lg. 7 & 1⅞, or 4½ (slot meter 5½); pb. lg. 1½; pr. 2 to 1½; htg. 1	Max. dem., flat rate, sl scale & cont.	483,632†	Bulk D.C. supply to Naval Authorities. *3-ph. pr., 173 & 397 v. †Dec. due to mtl-fil. lps. Data to Mar. 31, 1909	146	
4,292=29,505 H.P.	..	49,115 KW.	4.48	Lg. 3½ to ¾; pb. lg. arc £12 & £10 p.a.; pr. 1½ to ¾* (1908-9)	Max. demand, flat rate, cont. & spl.	34,464,911	3 stn.; at 2, part supply to sub-stn. 25~ 3-ph. at 6,500 v. *Spl. rates to very large pr. cons. Data to May 31, 1909	147	
50=216 H.P.	16=480 H.P.	863 KW.	1.75	Lg. 4½; pr. 2½ & spl.; tr. 1½ ..	Flat rate & contract	490,187	Lighting and traction station. Data to end of 1909 ..	148	
..	60=2,100 H.P.	3,900 KW.	6.7	Lg. 6 & 2, or 4; pb. lg. 1.8 4; pr. 1½ to ¾, and special; tr. 1	Max. dem., flat rate & sl. scale	1,451,830	Lighting and traction. Data to Mar. 31, 1910	149	
28 KW. ..	65 H.P. ..	27,549 KW.	28	Lg. 7 & 4, or 6; pb. lg. cont.; pr. 4 & 1½	Max. demand, flat rate and contract	317,077	Data to Dec. 31, 1909	150	
3=6½ H.P. ..	..	267 KW. ..	..	Lg. 6 & 4, or 1/3 per c.p. p.a.; pr. 3	Max. demand and contract	4,000	Data for 1909	151	
7=23.64 H.P.	..	185 KW. ..	82.7	Lg. 4½; pr. 2, 1½ & 1	Flat rate with dis.	43,102	*Current supplied in bulk by Gosport & Fareham Tramways Station at 1½d. per unit. Data to Dec. 31, 1909	152	
4,759 H.P. ..	..	5,890 KW.	18.8	Lg. 6 & 1, or 3½ & 3; pb. lg. arc £14 p.a.; pr. 2 to ⅔	Max. demand, flat rate & sliding scale	2,351,379 (estimated)	Data to May 15, 1909	153	
351 KW. ..	..	1,189 KW.	1	Lg. 7 & 3, or 5; pr. 4 & 1, or 2½, and special	Max. dem., flat, 2-rate & contract	315,764	Hire-purchase over 3, 5 or 7 years. Data to Dec. 31, 1909	154	
1=1½ H.P. ..	..	2½ KW. ..	*	Lg. 5; pr. 1½; htg. 1½	Flat rate	*	Water power. *First year. Data to April 21, 1910 ..	155	
10=85 H.P.	40=1,200 H.P.	567 KW.	..	Lg. 7 & 1½, or 4; pb. lg. arc £20 & £10, inc. £3 14; pr. 2-rate, 5 & 1, or 1½; tr. 2 to 1½	Max. demand, flat, 2-rate m. & cont.	981,130	Lighting and traction. Data to Mar. 31, 1909	156	
24=72 H.P.	..	427 KW.	..	Lg. 5 to 3; pb. lg. 3; pr. 2½ ..	Sliding scale & flat rate	211,580	.. ..	157	
15=55 H.P. ..	..	1,680 KW.	..	Lg. 5 to 3½; pb. lg. 5, less 33⅓%; pr. 1½, or 2 to 1½	Flat rate & sliding scale	368,825	Data to Dec. 31, 1909	158	
396=5,381* H.P.	82=2,250 H.P.	10,036 KW.*	11	Lg. 4 & 1½ or fixed charge + 1d. per unit; tr. 1½ to 0.85	Max. dem., flat rate, sl. scale & cont.	5,020,000*	Lighting and traction. *Data to June 30, 1910 (estd.) ..	159	
..	..	37 KW. ..	..	Lg. 6; pr. 6	Flat rate	*	*Supply started April, 1910	160	
162=1,065 H.P.	Max. dem. = 252 KW.	3,463 KW.* (ex. tr.)	..	Lg. 3½; pb. lg. arc £20 p.a.†; pr. 2½ to 1 (time sw. 1d.); tr. 1½ to 1½	Flat rate, sl. scale, cont. w. dis. & t. sw.	2,350,869	Lg. & tr. (supply to Tram. Co.). *Also bulk supply to G.C. Ry. Docks & Admlty. †Inc. £2¾. Data to Mar. 31, 1910	161	
196=1,929 H.P.	..	2,973 KW.	3.72	Lg. 7 & 3, or 6, 5½; pb. lg. inc. £2½ p.a.; pr. 4 & 1½, or 2½, 2; htg. 2	Max. dem., flat rate, cont., t. sw. & spl.	1,294,612	Two stations, one gas power. 3,600 v. D.C. to sub-stations. Data to Dec. 31, 1909	162	
71=386 H.P.	..	*	..	Lg. 7 to 4, less 1d. discount; pb. lg. cont.; pr. 4 to 2, less 1d. dis.	Flat rate, sl. sc., 2-rate mtr. & cont.	390,488	Part oil power (Diesel engines). *Number of lamps connected not registered. Data to Dec. 31, 1909	163	
470=2,185 H.P.	See other Table.	5,759 KW.	5.6	Lg. 4 to 3; pb. lg. 3; pr. 2 to ⅝; hg. 2; tr. 1	Flat rate & sl. sc.; 2-rate & t. sw.	5,477,369	Lighting and traction (A.C. to sub-stations, 3-ph., 5,500 v., 25~). Data to Mar. 31, 1910	164	
93=430 H.P.	..	938 KW. ..	25.9	Lg. 4; pr. 2 & 1	Max. demand & flat rate	393,596	Data to Dec. 31, 1907	165	
93=479 H.P.	3=360 H.P.	1,462 KW.	24.8	Lg. 4; pb. lg. £12 p.a.; pr. & tr. 2 & 1½	Flat rate with dis.	855,000 (approx.)	Lighting and traction. Data to Mar. 31, 1910	166	
144=1,101 H.P.	..	3,345 KW.	13.9	Lg. 6, 4½, 3, 2 & 1; pb. lg. average 1.8 inclusive; pr. 3, 1, ⅝ & ⅓	Max. dem., 2-rate, cont. & time sw.	1,841,214 (approx.)	Small auxiliary plant at destructor works. Data approx. to April 1910, otherwise to Mar. 31, 1910	167	
118=495 H.P. 862 KW.	..	3,190 KW.	4.8	Lg. 6 & 2, or 5; pb. lg. 1½; pr. 5, 2 & 1½; htg. 1½	Max. dem., flat rate & cont. with dis.	1,120,237*	*Reduction on total units sold, owing to metallic filament lamps. Data for year ending Dec., 1909	168	
..	..	1,091 KW.	5.1	Lg. inc. 7 & 4½, arc 7 & 1; pr. 4 & 1½ (restricted hrs. 1½); ch. 6	Max. demand ..	410,276	Data to Dec. 31, 1909	169	
..	..	..	..	.. ..	.. .. ..	..	Order transferred to the Cleveland and Durham Power Co. No separate returns published	170	
22=81 H.P.	..	1,579 KW.	4	Lg. 6½ with dis.; pb. lg. arc £25, p.a.; pr. 2	Flat rate with discounts	755,372	Data to Mar. 31, 1909	171	
900 KW. ..	..	1,491 KW.	18	Lg. 5 & 3, or 4 (mills); pb. lg. about 1.25; pr. 2½ to 0.9	Max. dem., flat rate, sl. scale & cont.	958,444	400-KW. extension in hand. Data to Dec. 31, 1909 ..	172	
3,421 KW. (inc. pr. & htg.)	..	3,906 KW.	..	Lg. 3½; pr. 1½ with discounts ..	Flat rate with dis.	..	*Also bulk supply fm. C. of D. Co. Cons. Engrs. Merz & McLellan; Man. C. W. Fairweather. Data to Dec. 31, '09	173	
29=115 H.P.	..	167 KW. ..	12	Lg. 5; pb. lg. 3; pr. 2	Flat rate with discounts	89,000	Data to Mar. 31, 1910	174	
181=1,121¾ H.P.	400 KW. ..	1,828 KW.	20	Lg. 4; pb. lg. 1.72; pr. 2 to .75; tr. 2	Flat rate, sl. scale w. dis. & special	893,981	Lighting and traction. Data to Mar. 31, 1910	175	
17=72 H.P. ..	..	738 KW. ..	83	Lg. 5; pr. 1½; hg. 1½	Flat rate	203,371	*Engineer & Manager, B. G. Drummond. Data to Dec. 31, 1909	176	
109=501 H.P.	..	1,468 KW.	12.5	Lg. 4½; pr. 3 to 1, with dis. ..	Flat rate, 2-rate, & sl. scale with dis.	400,000 (estimated)	Data to Mar. 25, 1910	177	
91½ KW. ..	..	450 KW. ..	20.7	Lg. 7 & 2 (max. 5); pb. lg. arc £14½ p.a.; pr. 4½ & 1½	Max. demand and flat rate	185,125	*E. T. R. Murray, engineer-in-chief. †Bulk supply from North Met. El. Power Supply Co. Data to Dec. 31, '09	178	
56=337 H.P.	..	1,143 KW.	6.9	Lg. 5 w. dis. to 20%; pb. lg. arc £20 mtl. £4 p. lamp p.a.,; pr. 2, 1½, 1½	Flat rate with discounts	605,616	Station run in conjunction with 6-cell destructor. Data to Dec. 31, 1909	179	
9=43½ H.P. ..	..	91 KW. ..	..	Lg. 5; pr. 2	Flat rate with discounts	43,589	Lg. & tr. Consumers doubled wt. inc. demand; due to mtl.-fil. lps. Data to Dec. 31, 1907	180	
75=325 H.P.	16=400 H.P.	483 KW. ..	16	Lg. 6 & 3, or 4½; pb. lg. contract; pr. 2½ and 1½; tr. 1.3	Flat rate, sl. scale, cont. & special	674,228	Lighting and traction. Data to Mar. 31, 1910	181	
..	150.5 KW. ..	541 KW. ..	5½	Lg. 7 & 2, or 5; pb. lg. arc £16½, inc. £3 p.a.; pr. 4½ & 1½, & spl.	Max. dem., flat rate, and cont. w. dis.	898,506	Bulk supply from North Metropolitan E. P. S. Co. *E. T. R. Murray, engineer-in-chief. Data to Dec. 31, 1909	182	
150=555 H.P.	..	1,577 KW.	2.7	Lg. 5 & 2; pb. lg. arc £13, N. £3; pr. 4 & 1, or 2½	Max. dem., flat rate 2-rate & cont. w.dis.	868,245	Data to Dec. 31, 1909	183	
9=28½ H.P.	..	1,300 KW.	24 KW.	Lg. 8; pr. 4	Flat rate	98,650	Part oil power. Large extensions in progress. Data to Dec. 31, 1909	184	
14=17½ H.P.	..	226 KW. ..	9.15	Lg. 5; pr. 3; hg. 1½	Flat rate	50,399	*Resident engineer, Geo. T. Laverty. Data to Dec. 31, 1909	185	
8=5½ H.P. ..	..	253 KW. ..	23	Lg. 5; pb. lg. 3; pr. 3	Flat rate	125,287	Data to Mar. 31, 1908	186	
3=6 H.P. ..	..	87 KW.	..	Lg. 4½ (less 8⅓%); pb. lg. 3; pr. 2½	Flat rate with discount	27,114	.. ..	187	
86 KW. ..	..	2,802 KW.	20	Lg. 7 & 2, or 5 to 3; pb. lg. 3; pr. 2½ & 1, or 2	Max. demand and flat rate w. rebates	979,470	Data to Mar. 1910	188	
17=36 H.P.	..	514 KW. ..	16	Lg. 7 & 3, or 6; pb. lg. 4; pr. 3 & 1½	Max. demand and flat rate	208,613	Data to Mar. 31, 1909	189	
2,220 KW. (inc. collieries'	..	2,316 KW.	..	Lg. 4; pb. lg. £1 7s. per lamp per season; pr. 2 less dis.	Flat rate with discounts	..	*Bulk spl. from Durham Col. Elec. Pr. Co., Ltd. Dist. by Newcastle-on-T. Elec. Spl. Co., Ltd. Data to Dec. 31, '08	190	
135=438 KW. Rad. = 176 KW.	..	4,057 KW.	6.6	Lg. 5½, or 7 & 4; pr. 3 & 1½ ..	Flat rate and max. demand	1,192,508	Data to Dec. 31, 1909	191	
8=15 H.P. ..	..	222 KW. ..	50	Lg. 7 & 4, or 5; pb. lg. 2; pr. 5 & 2, or 3½ (2, time-switch).	Max. demand, flat rate & time switch	38,312	*Bulk supply from Brighton Corporation. Data to Mar. 31, 1910	192	
10=30 H.P.	..	1,691 KW.	12	Lg. 7 & 3, or 5½; pb. lg. 3½; pr. 3 & 1½, or 2	Max. dem., flat, sl. scale, 2-rate & t.s.	401,602	.. ..	193	
513=3,497 H.P.	..	8,844 KW.	20.1	Lg. 4; pb. lg. arc £17½, inc. 33s. p.a., pr. 2 & 1 (3-ph., 1 w. dis.)	Flat rate w. dis., sl. scale, cont. & spl.	3,829,681	*100 and 200 volts 1-ph.; 400 volts, 3-ph. Data to Dec. 31, 1909	194	
901=6,835 H.P.	..	11,788 KW.	7.90	Lg. 5 & 1½, or 4; pb. lg. arc £32, N. £6; pr. 5 & 1, w. discount	Max. dem., flat, sl. sc. w. dis., cont., t. sw.	5,906,726	Data to Mar. 31, 1910	195	
115=644 H.P.	£2=1,800 H.P.	4,380 KW.	8	Lg. & 1, or 3½; pb. lg. arc £18 & £9* p.a.; pr. 3 to 1, or 2 & 1; tr. 1.125	Max. demand, flat rate, & sl. scale	3,152,591	Lighting and traction. *Incandescent, £3½ p.a.; 32 C.P. cbn. or 50 and 64 C.P. mtl. Data to Mar. 31, 1910	196	
43=106 H.P.	..	636 KW.	10	Lg. 7 & 3, or 6; pr. 4 & 1½, or 2½	Max. dem., flat rate, and cont. w. dis.	163,992	Data to Dec. 31, 1909	197	
.. ..	26=650 H.P.	1,880 KW.	..	Lg. 8; pb. lg. 3; pr. 3 to 1½; tr. 1	Flat rate	..	Supply in bulk from Derby & Notts Electric Power Co. Data to Mar. 31, 1910	198	
6=20 H.P. ..	..	85 KW. ..	..	Lg. 6; pb. lg. 2.9; pr. 3 to 1 ..	Flat rate, sliding scale and contract	18,000 (approx.)	Water power. Data to Mar. 21, 1910	199	
63=322 H.P.	..	780 KW. ..	40	Lg. 7 & 3, or 6; pr. 4 & 1½, or 2½	Max. demand and flat rate	267,998	Data to Dec. 31, 1909	200	
378=911 H.P.	72=1,800 H.P.	3,644 KW.	..	Lg. 4 less 5% cash; pb. lg. 1.864; pr. 2 to 1½; tr. 1½	Flat rate	1,543,044	Lighting and traction. Data to Mar. 31, 1910	201	
7=24 H.P.	..	118 KW. ..	1.2	Lg. 6; pb. lg. 3; pr. 3; hg. 1½	Flat rate	37,000	*Resident engineer, E. E. Smeeton. Data to Dec. 31, 1909	202	

353	READING .. .. ..
354	REDDITCH .. .. ..
355	REICATE .. .. ..
356	RHYL .. ..
357	RICHMOND (SURREY) ..
358	ROCHDALE .. .. ..
359	ROSS .. ..
360	ROTHERHAM .. .. ..
361	ROTHESAY .. .. ..
362	ROTTINGDEAN .. .. ..
363	ROUNDHAY .. .. ..
364	RUGBY .. ..
365	RUGBY SCHOOL .. ..
366	RYDE & ST. HELENS ..
367	ST. ALBANS .. .. ..
368	ST. ANDREWS .. ..
369	ST. ANNES-ON-SEA ..
370	ST. AUSTELL .. .. ..
371	ST. HELENS .. .. ..
372	SALE .. ..
373	SALISBURY .. .. ..
374	SALTBURN .. .. ..
375	SCARBOROUGH .. ..
376	SHANKLIN & SANDOWN
377	SHEERNESS AND QUEENBOROUGH
378	SHEFFIELD .. .. ..
379	SHILDON .. ..
380	SHIPLEY .. ..
381	SHREWSBURY .. .. ..
382	SLEAFORD .. .. ..
383	SLOUCH & DATCHET
384	SMETHWICK & OLDBURY
385	SOUTHAMPTON .. ..
386	SOUTHEND-ON-SEA ..
387	SOUTHPORT .. .. ..
388	SOUTH SHIELDS .. ..
389	SPENNYMOOR .. .. ..
390	STAFFORD .. .. ..
391	STALYBRIDGE .. .. ..
392	STAMFORD .. .. ..
393	STIRLING .. .. ..
394	STOCKPORT .. .. ..
395	STOCKTON-ON-TEES ..
396	STOKE-ON-TRENT & FENTON
397	STOWMARKET .. .. ..
398	STRATFORD-ON-AVON
399	STRETFORD .. .. ..
400	SUNDERLAND .. .. ..
401	SURBITON .. .. ..
402	SUTTON, CARSHALTON, WALLINGTON & CHEAM
403	SUTTON COLDFIELD ..
404	SWANSEA .. .. ..
405	SWINDON .. .. ..
406	SWINTON & PENDLEBURY
407	TAUNTON .. .. ..
408	THIRSK AND SOWERBY
409	TODMORDEN .. .. ..
410	TONBRIDGE .. .. ..
411	TONYREFAIL AND CILFACH COCH
412	TOPSHAM .. .. ..
413	TORQUAY .. .. ..
414	TOTNES .. ..
415	TOTTENHAM .. .. ..
416	TRAFFORD PARK & SALE
417	TREETON .. .. ..
418	TUNBRIDGE WELLS ..
419	TWICKENHAM, HAMPTON & TEDDINGTON*
420	TYNEMOUTH .. .. ..
421	UXBRIDGE AND DIST.
422	VENTNOR, BONCHURCH AND ST. LAWRENCE
423	WAKEFIELD .. .. ..
424	WALLASEY .. .. ..
425	WALSALL .. .. ..
426	WALTHAMSTOW .. ..
427	WALTON-ON-NAZE ..
428	WARRINGTON .. ..
429	WATFORD .. .. ..

181 HEYWOOD	Heywood Corporation ..	1900	Jas. Stott ..	200 & 400 tr. 500	Direct ..	900	160	100 KW.	£26,986	251 KW.	45 mtl. ..	75=325 H.P.	16=40
182 HICH BARNET	North Metropolitan Elec. Pr. Distribution Co., Ltd.	1900	H. Bernard Sale (Res.)*	230 & 460	Direct ..	†	300	..	£14,983	370 KW.	18 arc, 177 mtl.	..	150.5
183 HIGH WYCOMBE ..	Wycombe (Borough) Electric Light & Power Co., Ltd.	1898	W. E. Brandreth	210 & 420	Direct ..	880	530	110 KW.	£101,017	958 KW.	12 arc, 20 mtl., 365 N.	150=555 H.P.	
184 HINDHEAD AND DIST.	Hindhead & District Electric Light Co., Ltd.	1900	T. B. Reader ..	230 D.C., 100 A.C.	Direct & 50 ~, 1-ph.	160	80	70 KW.	£19,956	250 KW.	2 mtl. ..	9=26⅔ H.P.	
185 HITCHIN..	Electric Supply Corporation, Ltd.	1905	K. A. Scott-Moncrieff*	240 & 480	Direct ..	200	65.5	77 KW.	£19,150	208 KW.	..	14=17½ H.P.	
186 HOLYHEAD	Holyhead Urban District Council	1904	P. Williams ..	200 & 400	Direct ..	220	140	240 KW.	£21,405	212 KW.	9 arc, 452 cbn.	8=5⅓ H.P. ..	
187 HONLEY	Honley Urban District Council	1904	Harry Marsden (Gen. Man.)	200	Direct ..	75	26	..	£3,100	80 KW.	2 arc, 99 inc.	3=6 H.P. ..	
188 HORNSEY	Hornsey Corporation	1903	N. Staniland ..	240 & 480	Direct ..	1,300	877	250 KW.	£150,092	2,768 KW. inc. pr.	58 arc, 138 mtl.	36 KW. ..	
189 HORSHAM	Horsham Urban District Council	1902	J. B. Morgan ..	230 & 460	Direct ..	400	191	115 KW.	£31,231	514 KW.	21 arc, 290 mtl	17=36 H.P.	
190 HOUCHTON-LE-SPRING	Houghton-le-Spring & Dist. Electric Lighting Co., Ltd.	1907	..	220	40~, 3-ph.	Bulk supply*	..	..	..	96 KW.	24 mtl. ..	2,220 KW. (inc. collieries)	
191 HOVE	Hove Electric Lighting Co., Ltd.	1892	C. B. Smith ..	220	Direct ..	1,608	1,007	36 KW.	£167,379	3,443 KW.	..	135=438 KW.	
192 HOVE (ALDRINGTON)..	Hove Corporation	1905	H. H. Scott (Boro' Surveyor)	220 & 440	Direct ..	*	167	..	£9,290	167 KW.	40 mtl. ..	Rad.=176 KW. 8=15 H.P. ..	
193 HOYLAKE & W. KIRBY	Hoylake & W. Kirby Urban District Council	1901	C. J. Turner ..	230	50~, 1-ph.	625	330	300 A.H.	£52,019	1,341 KW.	3 arc, 429 cbn., 50 mtl., 8 N.	10=30 H.P.	
194 HUDDERSFIELD ..	Huddersfield Corporation ..	1898	A. B. Mountain	100, 200, & 400*	100~, 1 ph. 50~, 3-ph.	5,750 3-ph. 3,150 1-ph.	2,870	..	£220,454	5,317 KW.	39 arc, 48 inc. 4 N.	513=3,497 H.P.	
195 HULL	Hull Corporation	1898	H. Bell	220 & 440	Direct ..	6,454	4,790	433 KW.-hrs.	£354,977	6,657 KW.	28 arc, 42 Nernst	601=6,835 H.P.	
196 ILFORD	Ilford Urban District Council	1901	A. H. Shaw ..	230 & 460 tr. 500	Direct ..	3,600	1,665	200 KW.	£173,101	2,731 KW.	106 arc, 296 cbn., 1,300 mtl.	115=644 H.P.	52=1,300
197 ILFRACOMBE.. ..	Ilfracombe Electric Light & Power Co., Ltd.	1903	H. J. F. Stewart	240 & 480	Direct ..	330	179	8½ KW.	£35,130	505 KW.	..	43=103 H.P.	
198 ILKESTON	Ilkeston Corporation	1903	H. P. Stokes ..	230 & 460 tr. 500	Direct ..	*	..	..	..	1,320 KW.	21 arc, 192 cbn., 8 mtl.	..	26=650
199 INCLETON (YORKS) ..	Ingleton Electric Lighting & Power Co., Ltd.	1900	D. Tattersall ..	100 & 200	Direct ..	29	22	12½ KW.	£7,000	63 KW.	87 inc. ..	6=20 H.P. ..	
200 INVERNESS	North of Scotland Electric Light & Power Co., Ltd.	1905	E. J. Williams..	240 & 480	Direct ..	330	222	100 KW.	£34,340	264 KW.	..	62=322 H.P.	
201 IPSWICH	Ipswich Corporation	1903	F. Ayton ..	230 & 460	Direct ..	1,511	1,050	210 KW.	£89,041	1,834 KW.	14 mtl. ..	278=911 H.P.	72=1,800
202 JEDBURGH	Electric Supply Corporation Ltd.	1903	K. A. Scott-Moncrieff*	225 & 450	Direct ..	66	30	35 KW.	£13,000	88 KW.	9 arc, 12 cbn., 102 Nernst	7=24 H.P.	
203 KEICHLEY	Keighley Corporation.. ..	1901	..	230 & 460, tr. 500	Direct ..	740	380	100 KW.	£57,409	333 KW.	18 arc, 24 cbn., 48 N.	108=490 H.P.	24=720
204 KENDAL	Kendal Corporation	1902	John A. T. Barnes	220 & 440	Direct ..	109.5	77	40 KW.	£13,888	160 KW.	..	26=97 H.P.	
205 KESWICK	Keswick Electric Light Co., Ltd.	1890	W. Jackson ..	100	75~, 1-ph.	120	60	..	£13,761	..	3 arc, 20 inc.	..	
206 KETTERING	Kettering Urban District Council	1904	W. A. Walker ..	230 & 460	Direct ..	775	577.7	92 KW.	£55,407	684 KW.	30 arc, 292 mtl.	169=810½ H.P.	
207 KEYNSHAM & KINGSWOOD	Keynsham Electric Light & Power Co., Ltd.	1891	G. J. T. J. Parfitt	230	Direct ..	75	55	50 KW.	£4,350	119 KW.	6 Nernst, 119 inc.	6=26 H.P.	
208 KIDDERMINSTER ..	Kidderminster & District Elec. Ltg. & Traction Co., Ltd.	1900	A. Charlton ..	230 & 460	Direct ..	1,550	575	220 KW.	£45,774	665 KW.	..	41=919 H.P.	26=680
209 KILDARE..	Naas Rural District Council	1905	H. Rylance ..	200	Direct ..	82	..	..	£3,300	..	..	..	
210 KILLARNEY	Kerry Electric Supply Co., Ltd.	1898	Valentine Ryan	100	100~, 1-ph.	160	52	..	£9,000	133 KW.	..	..	
211 KILMACOLM	Kilmacolm Electric Lighting Co., Ltd.	1903	James White ..	240 & 480	Direct ..	50	52	20 KW.	£10,000	315 KW.	4 cbn., 10 mtl.	5=7 H.P. ..	
212 KILMARNOCK	Kilmarnock Corporation ..	1904	A. H. Burbidge	240 & 480 tr. 550	Direct ..	755	531	60 KW.	£49,800	841 KW.	50 arc, 100 mtl. on arc posts	67=367 H.P.	28=730
213 KING'S LYNN	King's Lynn Corporation ..	1899	J. Pilling ..	200 & 400	Direct ..	680	362	60 KW.	£50,486	721 KW.	30×2 cbn., 488 mtl.†	82=354⅔ H.P.	
214 KINGSTON-UPON-THAMES	Kingston-upon-Thames Corporation	1893	J. E. Edgcome ..	105	77~, 1-ph.	860	574	..	£99,651	1,303 KW.	76 arc*, 200 cbn., 35 mtl.	53=219 H.P.	
215 KIRKCALDY	Kirkcaldy Corporation ..	1902	O. F. Francis ..	230 & 460, tr. 500	Direct ..	1,090	765	..	£65,098	..	104 arc, 212 cbn.	882 B.H.P. ..	44=1,232
216 LANCASTER	Lancaster Corporation ..	1893	W. A. Tester ..	230 & 460, tr. 525	Direct ..	1,250	700	..	£63,300	1,770 KW.	41 arc, 84 mtl.	104=440 H.P.	24=640
217 LARNE	Larne Electric Light Works, Ltd.	1891	M. G. Smyth ..	105 & 210	100~, 1-ph.	150	72	..	..	78 KW.	14 arc, 136 inc.	..	
218 LEAMINGTON	Midland Electric Light & Power Co., Ltd.	1887	Percy Olver ..	115 & 230	Direct ..	524	289	110 KW.	..	858 KW.	1 arc ..	43=65 H.P.	
219 LEATHERHEAD ASHTEAD & MICKLEHAM	Leatherhead & District Electricity Co., Ltd.	1902	H. Leslie Dixon	220 & 440	Direct ..	150	107.3	80 KW. (600 A.H.)	£33,450	389 KW.	..	13=47 H.P.	
220 LEEDS	Leeds Corporation	1893	H. Dickinson ..	100, 200 & 400	50~, 1-ph. & 2-ph.	15,740	8,900	..	£940,000 (est.)	10,913 KW.	707 arc ..	2,088=12,836 H.P.	
221 LEEK	Leek Urban District Council..	1904	R. M. Carr ..	230 & 460	Direct ..	430	177	64.4 KW.	£15,747	232 KW.	..	44=262 H.P.	
222 LEICESTER	Leicester Corporation.. ..	1894	.. ..	100 & 200	50~, 1 ph.	4,400	1,962	..	£290,893	6,754 KW.	..	352=1,138 H.P.	
223 LEIGH	Leigh Corporation	1899	Arthur T. Smith	220 & 440	Direct ..	760	471	132 KW.	£46,000 (estd.)	700 KW.	..	180=1,100 H.P	
224 LEITH	Leith Corporation	1899	A. P. Rutherford	230 & 460 tr. 500	Direct ..	2,950	1,943	75 KW.	£151,192	..	336 arc ..	436=3,560 B.H.P.*	72=2,160
225 LETCHWORTH	First Garden City Co., Ltd. .	1907	Charles Gould ..	250 & 500	Direct ..	130	90	40 KW.	..	10 KW.	..	25=90 K W.	
226 LEWES	Lewes & District Electric Supply Co. Ltd.	1901	C. F. Butler ..	230 & 460	Direct ..	330	130	20 KW.	..	381 KW. (approx.)	..	18=80 B.H.P.	
227 LEYTON	Leyton Urban District Council	1896	F. Harman Lewis	150 & 300 tr. 500	Direct ..	3,140	1,050 lg. 910 tr.	64 KW.	£179,203	2,030 KW.	82 arc, 819 cbn., 697 mtl.	85=232 H.P.	120=3,600
228 LIMAVADY	Limavady Power & Light Works	1897	E. J. S. Ritter ..	110 & 220	100~, 1-ph.	60	40	..	..	50 KW.	..	..	..

~=cycles per second; lg. = lighting; pb. lg. = public lighting; pr. = power; htg. = heating; inc. = incandescent; cbn. = carbon; mtl. = metal filament; N. = Nernst; A. = amperes; A.H. = ampere-hours; ph. =

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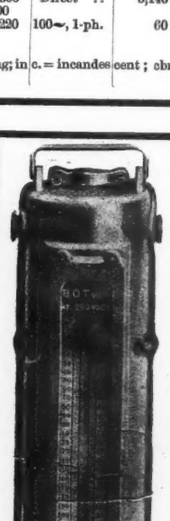

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					counts		mtl.-fil. lps. Data to Dec. 31, 1907	
75=325 H.P.	16=400 H.P.	488 KW. ..	16	Lg. 6 & 3, or 4½; pb. lg. contract; pr. 2½ and 1½; tr. 1.3	Flat rate, sl. scale, cont. & special	674,228	Lighting and traction. Data to Mar. 31, 1910	181
..	150.5 KW. ..	541 KW. ..	5½	Lg. 7 & 2, or 5; pb. lg. arc £16½, inc. £3 p.a.; pr. 4½ & 1½, & spl.	Max. dem., flat rate, and cont. w. dis.	398,506	Bulk supply from North Metropolitan E. P. S. Co. *E. T. R. Murray, engineer-in-chief. Data to Dec. 31, 1909	182
150=555 H.P.	..	1,577 KW.	2.7	Lg. 5 & 2; pb. lg. arc £13, N. £3; pr. 4 & 1, or 2½	Max. dem., flat rate 2-rate & cont. w.dis.	868,245	Data to Dec. 31, 1909	183
9=28½ H.P.	..	1,300 KW.	24 KW.	Lg. 8; pr. 4	Flat rate	98,650	Part oil power. Large extensions in progress. Data to Dec. 31, 1909	184
14=17½ H.P.	..	226 KW. ..	9.15	Lg. 5; pr. 3; hg. 1½	Flat rate	50,399	*Resident engineer, Geo. T. Laverty. Data to Dec. 31, 1909	185
8=5½ H.P. ..	..	253 KW. ..	23	Lg. 5; pb. lg. 3; pr. 3	Flat rate	125,287	Data to Mar. 31, 1908	186
3=6 H.P. ..	..	67 KW.	..	Lg. 4½ (less 8⅓%); pb. lg. 3; pr. 2½	Flat rate with discount	27,114	.. ..	187
36 KW. ..	..	2,802 KW.	20	Lg. 7 & 2, or 5 to 3; pb. lg. 3; pr. 2½ & 1, or 2	Max. demand and flat rate w. rebates	979,470	Data to Mar. 1910	188
17=36 H.P.	..	514 KW. ..	16	Lg. 7 & 3, or 6; pb. lg. 4; pr. 3 & 1½	Max. demand and flat rate	208,613	Data to Mar. 31, 1909	189
2,220 KW. (inc. collieries'	..	2,316 KW.	..	Lg. 4; pb. lg. £1 7s. per lamp per season; pr. 2 less dis.	Flat rate with discounts	..	*Bulk spl. from Durham Col. Elec. Pr. Co., Ltd. Dist. by Newcastle-on-T. Elec. Spl. Co., Ltd. Data to Dec. 31, '08	190
135=438 KW. Rad.=176 KW.	..	4,057 KW.	6.6	Lg. 5½, or 7 & 4; pr. 3 & 1½ ..	Flat rate and max. demand	1,192,508	Data to Dec. 31, 1909	191
8=15 H.P. ..	..	222 KW. ..	50	Lg. 7 & 4, or 5; pb. lg. 2; pr. 5 & 2, or 3½ (2, time-switch).	Max. demand, flat rate & time switch	38,312	*Bulk supply from Brighton Corporation. Data to Mar. 31, 1910	192
10=30 H.P.	..	1,691 KW.	12	Lg. 7 & 3, or 5½; pb. lg. 3½; pr. 3 & 1½, or 2	Max. dem., flat, sl. scale, 2-rate & t.s.	401,602	.. ..	193
518=3,497 H.P.	..	8,844 KW.	20.1	Lg. 4; pb. lg. arc £17½, inc. 33s. p.a., pr. 3 & 1 (3-ph., 1 w. dis.)	Flat rate w. dis., sl. scale, cont. & spl.	3,829,681	*100 and 200 volts 1-ph.; 400 volts, 3-ph. Data to Dec. 31, 1909	194
601=6,885 H.P.	..	11,788 KW.	7.39	Lg. 5 & 1½, or 4; pb. lg. arc £32, N. £6; pr. 2 to 1, w. discount	Max. dem., flat, sl. sc. w. dis., cont., t. sw.	5,806,726	Data to Mar. 31, 1910	195
115=344 H.P.	£2=1,300 H.P.	4,380 KW.	8	Lg. 6 & 1, or 3½; pb. lg. arc £18 & £9* p.a.; pr. 2 to 1, or 3 & 1; tr. 1.125	Max. demand, flat rate, & sl. scale	3,152,591	Lighting and traction. *Incandescent, £3½ p.a.; 32 C.P. cbn. or 50 and 64 C.P. mtl. Data to Mar. 31, 1910	196
43=103 H.P.	..	626 KW.	10	Lg. 7 & 3, or 6; pr. 4 & 1½, or 2½	Max. dem., flat rate, and cont. w. dis.	163,992	Data to Dec. 31, 1909	197
..	26=650 H.P.	1,880 KW.	..	Lg. 3; pb. lg. 3; pr. 2 to 1½; tr. 1	Flat rate	..	Supply in bulk from Derby & Notts Electric Power Co. Data to Mar. 31, 1910	198
6=20 H.P. ..	..	85 KW. ..	..	Lg. 6; pb. lg. 2.9; pr. 3 to 1 ..	Flat rate, sliding scale and contract	18,000 (approx.)	Water power. Data to Mar. 21, 1910	199
62=322 H.P.	..	730 KW. ..	49	Lg. 7 & 3, or 6; pr. 4 & 1½, or 2½	Max. demand and flat rate	267,968	Data to Dec. 31, 1909	200
278=911 H.P.	72=1,800 H.P.	3,644 KW.	..	Lg. 4 less 5% cash; pb. lg. 1.854; pr. 2 to 1½; tr. 1½	Flat rate	1,543,044	Lighting and traction. Data to Mar. 31, 1910	201
7=24 H.P.	..	113 KW. ..	1.2	Lg. 6; pb. lg. 3; pr. 3; hg. 1½	Flat rate	37,960	*Resident engineer, J. H. Dennison. Data to Dec. 31, 1909	202
108=490 H.P.	24=720 H.P.	1,366 KW.	6.8	Lg. 7 & 2, or 4½ to 4; pb. lg. 1.78; pr. 2 to 1; tr. 1.76	Max. dem., flat, sl. scale & cont. w. dis.	522,433	Lighting and traction. Data to June 30, 1907 ..	203
26=97 H.P.	..	244 KW.	..	Lg. 6; pr. 2½ to 1½	Flat rate	55,594	Part gas power. Data to Mar. 31, 1910	204
..	..	267 KW.	..	Lg. 6; pb. lg. contract; pr. 3 ..	Flat rate	53,568	Part water power.	205
169=810½ H.P.	..	1,818 KW.	4.5	Lg. 4½ (arc 3); pb. lg. arc £17*; pr. 2 to 1	Flat rate & sliding scale	788,109	*Inc. £5 5s. all night; £3 3s. half-night. Data to Mar. 31, 1910	206
6=26 H.P.	..	151.5 KW.	..	Lg. 6; pb. lg. £226 p.a.; pr. 2 to 2½	Flat rate with discount	58,400	.. ..	207
41=919 H.P.	26=680 H.P.	2,319 KW.	10.3	Lg. 7 & 2½ (ave. max. 4½) w. discount; pr. 4½ & 1½	Max. demand w. dis., & 2-rate mr.	1,042,194	Lighting and traction. Data to Dec. 31, 1907	208
..	..	230 KW.	..	Lg. 5; pr. 2½	Flat rate	..	.. ..	209
..	..	150 KW. ..	..	Lg. 6d. with discounts	Flat rate	..	100-H.P. turbine and alternator being installed. Data to April 14, 1910	210
5=7 H.P. ..	..	320 KW. ..	1.6	Lg. 6; pb. lg. 25/- per lamp p.a.; pr. 4	Flat rate	51,805	Data to Dec. 31, 1909. Residential district	211
67=367 H.P.	28=780 H.P.	1,088 KW.	20	Lg. 4½ w. dis.; pb. lg. £765; pr. 2 w. dis. to 3; tr. 1½; htg. 1½	Sliding scale and flat rate	761,000 (est.)	Lighting and traction. Data to May 15, 1910	212
82=354½ H.P.	..	1,044 KW.	7.2	Lg. 4½ to 4½; pb. lg. 2.28; pr. 3 to 1; htg. 1½	Flat rate and max. demand* & spl.	457,661	Part gas power. *Pr. max. demand; flat rate in day-time. †470 50-c.p., 18 300-c.p. Data to Mar. 31, 1910	213
53=219 H.P.	..	1,500 KW.	..	Lg. 5, or 7 & 3; pb. lg. arc £20, 32-C.P. inc. £3½ p.a.; pr. 1½.	Max. demand and flat rate	692,462	*Two 32-C.P. inc. used after midnight. Data to May 7, 1908	214
882 B.H.P. ..	44=1,232 H.P.	..	..	Lg. 4½ to 3; pb. lg. arc £12 p.a.; pr. 1½ to 3; tr. 1½	Sliding scale ..	1,572,856	Lighting and traction. Data to May 15, 1909	215
104=440 H.P.	24=640 H.P.	2,300 KW.	10.27	Lg. 4½ (5% dis.); pb. lg. 1½ incl.; pr. 2½ & 1½ w. dis. to 20%; tr. 1.7	Flat, sl. scale, 2-rate & contract, w. dis.	765,450*	Lighting and traction. *Increase only 0.47%, due to bad trade and met.-fil. lamps. Data to Mar. 27, 1903	216
..	..	100 KW. ..	..	Lg. 8 to 1½; pb. lg. 2½ inclusive	Flat rate, contract and special	..	Data for 1908-9	217
43=65 H.P.	..	919 KW...	12.67	Lg. 7 & 2½, or 5½*; pr. 2½ or £5 p. H.P. p.a. & 1½ p.u.	Max. demand, flat rate & time switch*	238,207	*Time switch and 2-rate meter, 6d. and 2½d. Data to Dec. 31, 1909	218
13=47 H.P.	..	424 KW...	6	Lg. 6½ to 5 (2-rate 5 & 3*); pr. 3 to 2½, or £14 per KW. p.a. + 2 p.u.	Flat rate, sl. scale, & 2-rate meter.	133,867	*Or 12/- per 32-w. lamp p.a. Diesel oil engines. Data to Dec. 31, 1909	219
2,088=12,836 H.P.	..	22,145 KW.	12.5	Lg. 4 & 1; pb. lg. 1½; pr. 1½ to 0.8 (less 5%)	Special scale* and max. demand	12,500,000 (est.)	*Lg., 4d. first 1,000 hrs. use of lamps, 1d. after; pr. max. demand. Data to Mar. 31, 1910 (partly est.)	220
44=262 H.P.	..	500 KW...	17	Lg. 7 & 2, or 6 to 3½; pr. 2 to 1	Max. dem., flat, sl. scale, time sw., spl.	315,500	Producer gas power (pressure type), using bituminous fuel. Data to Mar. 31, 1909	221
352=1,138 H.P.	..	8,386 KW.	7.4	Lg. 4; pr. 2, or £3 per H.P. p.a. & ⅔ p.u.	Flat rate	1,951,540	Max. load reduced owing to general use of metallic-filament lamps. Data to Dec. 31, 1909	222
180=1,100 H.P	..	1,444 KW.	..	Lg. 7 & 2, or 4½; pr. 3½ & 1; all less 5%	Max. demand & flat rate	809,275	Data to March 31, 1910	223
436=3,560 B.H.P.*	72=2,160 H.P.	5,498 KW. (ex. tr.)	8.5	Lg. 3 w. dis.; pb. lg. arc £14, £10½ & £7; pr. 1½ w. dis.; tr. 1	Flat rate, with discounts	2,122,705 May 15 '09	Lighting & traction. *Also 85 radiators=96 KW. Data to Mar. 31, 1910	224
25=90 K W.	..	100 KW.	300	Lg. 8 & 1½; pr. 1½	Max demand, flat rate, & special*	50,000	*30% of output supplied to the Co. for pumping, at ¾d. per unit	225
18=80 B.H.P.	..	451 KW...	17	Lg. 7 & 2½, or 5; pr. 4½ & 1½, or 2½	Max. demand & flat rate	180,813	Data to Dec. 31, 1909	226
85=232 H.P.	120=3,600 H.P.	5,700 KW.	5.9	Lg. 5 & 2, or 4*; pr. 3 & 1, or 1½; tr. 1½	Max. demand & flat rate	3,533,398	Lighting and traction. *Pb. lg. arc £21, inc. £4.3.6 (two 40-C.P.) per annum. Data to Mar. 31, 1909	227
..	..	50 KW. ..	..	10s. per 8-C.P., or 6d. per unit ..	Contract or flat rate	..	Water power. Data to May, 1910	228

A.H.=ampere-hours; ph.=phase; A.C.=alternating current; D.C.=direct current.

409	TODMORDEN .. ..
410	TONBRIDGE .. ..
411	TONYREFAIL AND GILFACH GOCH
412	TOPSHAM .. ..
413	TORQUAY .. ..
414	TOTNES .. .. ..
415	TOTTENHAM .. ..
416	TRAFFORD PARK & SALE
417	TREETON .. ..
418	TUNBRIDGE WELLS ..
419	TWICKENHAM, HAMPTON & TEDDINGTON*
420	TYNEMOUTH .. ..
421	UXBRIDGE AND DIST.
422	VENTNOR, BONCHURCH AND ST. LAWRENCE
423	WAKEFIELD .. ..
424	WALLASEY .. ..
425	WALSALL .. ..
426	WALTHAMSTOW ..
427	WALTON-ON-NAZE ..
428	WARRINGTON .. ..
429	WATFORD .. ..
430	WEDNESBURY .. ..
431	WELLINGBOROUGH ..
432	WEST BROMWICH ..
433	WEST HAM .. ..
434	WEST HARTLEPOOL ..
435	WESTON-SUPER-MARE
436	WEYBRIDGE AND WALTON-ON-THAMES
437	WEYMOUTH & MELCOMBE REGIS
438	WHITBY .. .. ..
439	WHITCHURCH AND PANGBOURNE
440	WHITEHAVEN .. ..
441	WIGAN .. .. ..
442	WILLESDEN .. ..
443	WIMBLEDON & MERTON
444	WINCHESTER .. ..
445	WINDERMERE AND AMBLESIDE
446	WINDSOR & ETON ..
447	WISHAW .. .. ..
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450	WOLVERHAMPTON ..
451	WORCESTER .. ..
452	WORKSOP .. ..
453	WORMIT .. .. ..
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	Place.	Supply Authority.	Year of opening.	Engineer.	Pressure of supply, volts.	Frequency and phase.	Total capacity of plant in KW.	Max. load recorded in KW.	Storage battery, max. discharge.	Total capital expended.	Private lighting.	Public lighting.	No. and B.H.P. of private motors.
229	LIMERICK	Limerick Corporation	1902	P. T. MacNamara	230	Direct	400	275	96 KW.	£35,000	..	61 arc, 1 mtl.	..
230	LINCOLN	Lincoln Corporation	1898	Stanley Clegg	230 & 460 tr. 500	Direct	1,895	890 lg. 100 tr.	34.5 KW.	£66,669	1,266 KW.	34 arc 96 mtl 2 N.	188=1,262½ H.P.
231	LIVERPOOL	Liverpool Corporation	1883	A. B. Holmes (Con.) A. Clough (Res.)	230 & 460, tr. 525	Direct	35,300	17,804	..	£2,069,710	653,752	198 arc, 426 cbn., 60 mtl.	2,628=10,771 H.P.
232	LLANDILO	Llandilo Urban District Council	1902	T. Bowen	230	Direct	120	45	23 KW.	£8,000	..	105 cbn.	3=7 H.P.
233	LLANDRINDOD WELLS	Llandrindod Wells Electric Light and Power Co., Ltd.	1897	J. Brown	230 & 460	Direct	260	..	..	..	..	..	..
234	LLANDUDNO	Llandudno Urban District Council	1898	H. Morton	220 & 440	Direct	700	460	36 KW.	£39,977	824 KW.	48 arc, 8 inc.	24=86 H.P.
235	LLANGOLLEN	Llangollen & District Electric Light and Power Co., Ltd.	1904	E. Bremner Smith	220	Direct	70	37	120 A.	£2,883	..	6 arc, 80×2 mtl.	2=8 H.P.
236	LLANRWST AND TREFRIW	Llanrwst Electricity Supply Co., Ltd.	1899	J. H. Targett	220	Direct	156	46	33 KW.	£9,742	108 KW.	94 mtl.	5=7 H.P.
237	BATTERSEA	Battersea Corporation	1901	F. A. Bond	230 & 460	Direct	3,592	2,233	500 KW.	£276,817	2,551 KW.	381 arc, 205 Nernst	2,062 H.P.
238	BERMONDSEY	Bermondsey Borough Council	1902	W. E. J. Heenan	240 & 480	Direct	2,225	1,445	70 KW.	£165,000	1,363 KW.	172 arc, 217 mtl., 51 N.	500=3,098 KW.
239	CHELSEA	Chelsea Electricity Supply Co., Ltd.	1889	Percy Still	200 & 400	Direct	3,500	2,797	..	£493,487	..	..	..
240	CITY OF LONDON	City of London Electric Lighting Co., Ltd.	1891	F. Bailey	204 & 410 D.C., 204 A.C.	Direct & 100~, 1-ph.	23,000	19,288	..	£2,141,357	..	..	..
241	FINSBURY	County of London Electric Supply Co., Ltd.	1897	C. P. Sparks	104 A.C., 550 D.C.	50~, 1-ph., & direct	9,000	5,000	..	£1,708,959*	*	..	*
242	FULHAM	Fulham Borough Council	1901	Arthur J. Fuller	200	50~, 2-ph.	2,950	1,706	..	£240,000	3,049 KW.	226 arc, 908 mtl.	175=1,893 H.P.
243	GREENWICH, LEWISHAM PENCE & SYDENHAM	South Metropolitan Electric Light & Power Co., Ltd.	1900	H. W. Bowden (Man. Dir. & Eng.)	200	50~, 2-ph.	6,000	3,075	..	£540,913	6,695 KW. inc. motors	..	..
244	HACKNEY	Hackney Borough Council	1901	L. L. Robinson	240 & 480	Direct	4,800	2,857	800 KW. for 4 hrs.	..	3,402 KW.	499 arc, 4 mtl.	2,715 KW.
245	HAMMERSMITH	Hammersmith Corporation	1897	G. G. Bell	110 & 220	50~, 1-ph.	7,000	4,653	..	..	3,740 KW.	254 arc, 522 mtl.	386=4,588 H.P.
246	HAMPSTEAD	Hampstead Corporation	1894	G. H. Cottam	105 & 210	90~, 1-ph.	5,190	3,237	..	£390,930	10,624 KW.	122 arc, 12 mtl.	97=540 H.P.
247	ISLINGTON	Islington Borough Council	1896	Albert Gay	100, 200 & 400	50~, 1-ph.	6,500	3,863	30 KW. for 3 hrs.	£453,710	4,893.5 KW.	615 arc, 31 mtl.	484=2,392 H.P.
248	KENSINGTON	Brompton and Kensington Electricity Supply Co., Ltd.	1889	R. S. Downe (Gen. Man.)	100	83~, 1-ph.	2,800	1,930	..	£275,361	..	16 arc	75=351 H.P.
249	KENSINGTON (N. OF HIGH STREET)	Notting Hill Electric Lighting Co., Ltd.	1891	Geo. Schultz	200	Direct	3,000*	1,450	260 KW.	£241,451	5,816 KW.	52 arc	66=228 H.P.
250	KENSINGTON AND KNIGHTSBRIDGE	Kensington & Knightsbridge Electric Lighting Co., Ltd.	1887	H. W. Miller	200	Direct	6,300*	3,975	1,100 KW.	£383,715	12,055 KW.	44 arc	233=1,180 H.P.
251	KENSINGTON AND NOTTING HILL	Jt. Ctee. of K. & Knightsbridge & Notting Hill E. L. Cos.	1900	H. W. Miller and G. Schultz	5,250	48~, 3-ph.	9,000	4,032	15 KW.	£221,197	..	..	..
252	LAMBETH	South London Electric Supply Co., Ltd.	1899	H. W. Sprunt	220	50~, 1-ph.	5,000	2,420	..	£363,356	5,000 KW.	25 arc	492=3078 H.P.
253	LONDON* & WESTMINSTER	London Electric Supply Corporation Ltd.	1885	G. W. Partridge	100 & 200 A.C. 230&460 D.C.	85~, 1-ph., & direct†	17,250	8,000	..	£1,211,279	9,042 KW.	63 arc	3,980 H.P.
254	MARYLEBONE	Marylebone Borough Council	1887	A. Hugh Seabrook (Gen. Man.)	240 & 480	Direct	12,000	7,824*	3,800 KW.	£2,040,000	14,737† KW.	87 arc, 2,179 mtl.	732=2,117 H.P.
255	MID LONDON AND PADDINGTON	Metropolitan Electric Supply Co., Ltd.	1887	J. S. Highfield (Eng. and Man.)	100 & 200	60~, 1-ph. & 2-ph. & d.	18,500	7,670† (inc. bulk)	2,400 KW.	£1,898,422	18,778 KW	..	5,136 KW. (inc. htg.)
256	POPLAR	Poplar Corporation	1900	J. H. Bowden	230 & 460	Direct	4,200	2,000	180 KW.	£230,654	3,628 KW.	342 arc, 556 mtl.	549=7,096.6 H.P.
257	ST. JAMES' WESTMINSTER	St. James & Pall Mall Electric Light Co., Ltd.	1889	S. T. Dobson	107 & 214	Direct	9,880	5,712	286 A.	£421,787	9,284 KW.	66 arc	1,845 KW., mtr. 686 KW., htg.
258	ST. PANCRAS	St. Pancras Borough Council	1891	S. W. Baynes	110, 220 & 440	Direct	8,280	4,268	..	£611,387	8,227 KW.	947 arc	942=4,685 H.P.
259	SHOREDITCH	Shoreditch Borough Council	1897	C. Newton Russell	240 & 480	Direct	6,055	2,875	..	£360,832	..	324 arc	810=3,998 H.P.
260	SMITHFIELD MARKETS	Smithfield Markets Electric Supply Co., Ltd.	1897	E. Dowling	100 & 200	Direct	965	582	..	£120,579	1,197 KW.	928 mtl.	547 H.P.
261	SOUTHWARK	Southwark Corporation	1899	D. M. Kinghorn	220 & 440	Direct	1,212	930	770 KW.	£94,421 (estd.)	1,447 KW.	101 arc, 158 mtl.	132=699 H.P.
262	STEPNEY	Stepney Borough Council	1899	W. C. P. Tapper	240 & 480	Direct	5,720	3,669	50 KW.	£358,513	3,890 KW.	484 arc, 122 mt., 108 N.	905=7,243 H.P.
263	STOKE NEWINGTON	Stoke Newington Corporation	1902	S. Hann	240 & 480	Direct	315*	225	55 KW.	£31,347	13,716 KW.	9 arc	25=70 KW.
264	WANDSWORTH	County of London Electric Supply Co., Ltd.	1897	C. P. Sparks	205 & 410	50 ~, 2-ph.	7,500	4,850	..	£1,703,959*	*	..	*
265	WESTMINSTER	Westminster Electric Supply Corporation, Ltd.	1891	Sir A. B. W. Kennedy	200 & 400	Direct	17,225*	10,169	..	£1,143,025	23,574 KW.	966 arc, 212 inc.	8,510 KW. pr. & htg.
266	WESTMINSTER & ST. JAMES	Central Electric Supply Co., Ltd.	1902	Sir A.B.W. Ken'dy S. T. Dobson*	6,000	50~, 3-ph.	12,880	8,616	450 A.H. (stn. htg.)	£582,066	..	..	..
267	WESTMINSTER, HOLBORN & CITY OF L.	Charing Cross, West End & City Electricity Supply Co.	1891	H. W. Kingston	100, 200 & 400*	Direct	22,920	12,792	3,075 KW. (normal)	£2,403,687	22,051 KW.	166 arc	14,508 H.P.
268	WOOLWICH, PLUMSTEAD & ELTHAM	Woolwich Corporation	1898	G. W. Keats	210 & 420*	Direct*	1,728	737	..	£163,965	1,372 KW.	77 arc, 154 inc., 18 Nernst	320 H.P.
269	LONDONDERRY	Londonderry Corporation	1894	R. V. Macrory	220 & 440	Direct	700	494	500 A.H.	£54,532	591 KW.	185 arc, 97 cbn. 8 mtl.	72=462 H.P.
270	LONG EATON	Harrington Electric Light Co., Ltd.	1897	W. B. Smith	115	Direct	210	130	..	£5,430	138 KW.	..	..
271	LONG EATON	Long Eaton Urban District Council	1903	F. Worrall	220	Direct	450	242	..	£22,864	463 KW.	2 arc, 290 inc., 92 Nernst	57=140 H.P.
272	LONGTON	Longton Corporation	1901	W. Langford	230	Direct	600	193	22 KW.	£27,832	390 KW.	23 arc	69=206 H.P.
273	LOUGHBOROUGH	Loughborough Corporation	1904	W. H. Allen	220 & 440	Direct	500	339	166 KW.	£32,065	372 KW.	12 arc, 38 mtl.	90=480 H.P.
274	LOWESTOFT	Lowestoft Corporation	1901	G. A. Bruce	230 & 460	Direct	1,475	901	..	£86,137	1,348 KW.	81 arc, 439 inc.	90=493 H.P.
275	LUDLOW	Ludlow Electric Light Co., Ltd.	1907	Edwards and Armstrong	230	Direct	75	30	57.5 KW.	£4,020	70 KW.	2 mtl.	6=5½ H.P.
276	LUTON	Luton Corporation	1901	W. H. Cooke	250 & 500	Direct	647	353	120 KW.	£36,679	623 KW.	10 arc, 24 inc., 3 Nernst	114=545 H.P.
277	LYME REGIS	Lyme Regis Electric Light & Power Co.	1909 (June 1)	..	110	Direct	50	..	38.5 KW.	£3,500	31 KW.	122 mtl.	2=3 H.P.
278	LYMINGTON	Lymington Electric Light & Power Co., Ltd.	1900	C. L. Holman	240 & 480	Direct	150	102.7	54.6 KW.	£36,280	451.38 KW.	67 mtl., 47 N.	26=93.75 H.P.
279	LYNTON & LYNMOUTH	Lynton & Lynmouth Electric Light Co., Ltd.	1890	P. T. Kimmins	100	100~, 1-ph.	175	91.5	..	£8,000	165 KW.	70cbn., 32 mtl.	4=15 H.P.
280	MACROOM	Macroom Electric Light Co.*	1899	D. E. McDonnell	230	100~, 1-ph.	150	47	..	..	67 KW.	97 inc.	..
281	MAIDENHEAD	Maidenhead Corporation	1902	C. O. Milton	230 & 460	Direct	406	275	100 KW.	£42,000	677 KW.	55 arc, 104 N., 50 mtl.	33=125 H.P.
282	MAIDSTONE	Maidstone Corporation	1901	E. E. Hoadley	230 & 460, tr. 500	Direct	1,250	988	138 KW.*	£77,000	966 KW.	72 arc., 440 mtl., 210 N.	1,461 H.P.
283	MALTON & NORTON	Northern Counties Electricity Supply Co., Ltd.	1904	A. E. Squires (Res.)*	230 & 460	Direct	180	93	..	..	200 KW.	180 mtl.	66 KW.
284	MALVERN	Malvern Urban District Council	1904	W. J. Rendell Baker	100 & 200	50~, 1-ph.	250	108	..	£21,000	463.9 KW.	..	14=38.5 H.P.
285	MANCHESTER	Manchester Corporation	1893	S. L. Pearce	100, 200, & 460 D.C.*	Direct, and 50~, 3-ph.*	45,300	33,785	3,500 KW. (approx.)	£2,633,049	25,920 KW.	98 arc	4,181=38,590 H.P.
286	MANSFIELD	Mansfield Corporation	1903	E. Holcombe Hewlett	240 & 480 tr. 550-600	Direct	720	305 lg. 500 tr.	280 KW. (1 hour)	£72,936*	668 KW.	40 arc, 12 Nernst	84=268 H.P.
287	MARDY (CLAM.)	Mardy Electric Light Co., Ltd.	1898	E. A. Davies	220*	Direct	60	49	12 KW.	£3,000	133 KW.	2 arc, 60 mtl.	5=10 H.P.
288	MARGATE & BROADSTAIRS & S. PETERS	Isle of Thanet Electric Tramways & Lighting Co., Ltd.	1903	J. A. Forde	240 & 480, tr. 500-550	Direct	1,600	1,000	60 KW.	..	750 KW.	21 arc	40=110 KW.
289	MARKET DRAYTON	Market Drayton Electric Light & Power Co., Ltd.	1903	C. F. Bottomley	240 & 480	Direct	90	66.5	43.2 KW.	£16,344 (1908)	219 KW.	..	111.5 KW., inc. hg.
290	MELROSE	Electric Supply Corporation, Ltd.	1904	K. A. Scott-Moncrieff*	225 & 450	Direct	66	21	35 KW.	£10,330	80 KW.	2 cbn., 44 N.	12=31 H.P.
291	MELTON MOWBRAY	Melton Mewbray Electric Light Co., Ltd.	1900	J. E. Edmundson	240 & 480	Direct	300	163	86 KW.	£40,288	414 KW.	..	51=141 H.P.
292	MERTHYR TYDFIL	Merthyr Electric Traction and Lighting Co., Ltd.	1901	L. W. Dixon	230 & 460	Direct	820	lg. 372, tr. 401	300 K.W.	£50,026	656 KW.	286 mtl.	32=1,060 H.P.
293	MEVAGISSEY	Mevagissey Electric Supply Co., Ltd.	1896	F. Johnson	110	Direct	15	10.4	11 KW.	..	24 KW.	57 mtl.	..
294	MEXBOROUGH	Mexborough Urban District Council	1902	John Senior	220 & 440	Direct	400	230	50 KW.	£22,737	390 KW.	15 arc, 200 inc., 20 mtl.	12=64 H.P.
295	MIDDLESBROUGH	Middlesbrough Corporation	1901	Horace M. Taylor	220 & 440	Direct	1,600	1,288	176 KW.	£107,000	2,027 KW.	..	1,430 H.P.
		Corporation	1902	S. Pauls	220 & 440 tr. 500	Direct	768	700	44 KW.	£40,255	235 KW.	18 arc, 36 cbn.	67=450 H.P.

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THE UNITED KINGDOM.

Public lighting.	No. and B.H.P. of private motors.	No. and H.P. of traction motors.	Total connections of all kinds.	Percentage increase during year.	Price charged per unit, pence.	System of charging.	Units sold during last complete year.	Remarks.	
arc, 1 mtl.	..	..	500 KW. ..	..	Lg. 5; pr. 3 & 1½	Flat rate with discounts	260,000	Producer gas power. Data to D.c. 31, 1909	229
arc 96 mtl N.	188=1,262½ H.P.	16=420 H.P.	2,541 KW.	6.9	Lg. 5 & 2½, or 4½ (ch. 4); pb. lg. 5 &2½ net; pr. 2 & 1, or 2½ 2; tr. 1½	Max. dem., flat w. dis., sl. sc., 2-rate, t.s.& spl.	1,642,424	Lighting and traction. Data to Mar. 31, 1910	230
3 arc, 426 n., 80 mtl. 5 cbn. ..	2,628=10,771 H.P.	Abt. 400 cars, 50 H.P each	26,171 KW. (ex. tr.)	5	Lg. 3½, 3 & 2½; pb. lg. 2; pr. 2, 1½ & 1; tr. ave. for 1909 1.099	Sliding scale & flat rate	85,348,161	Lighting and traction. Data to Dec. 31, 1909	231
.. ..	3=7 H.P. ..	..	..	..	Lg. 6; pb. lg. 3; pr. 4	Flat rate	28,000	Data to March 31, 1910	232
.. ..	..	..	..	..	Lg. 6; pr. 6 to 3½	Flat rate & scale ..	120,000	.. ..	233
arc, 8 ins.	24=86 H.P....	..	1,000 KW.	..	Lg. 7 & 2½, or 5½; pb. lg. 1.5; pr. 2	Max. demand, flat rate & contract	484,000	Max. load in summer	234
arc, 80×2 mtl.	2=8 H.P. ..	..	..	..	Lg. 7 & 4; pb. lg. 3, & cont.; pr. 4 (min. 10s. per H.P. per qr.)	Max. demand & flat rate	27,364	.. ..	235
mtl. ..	5=7 H.P. ..	..	107 KW.	6	Lg. 5; pb. lg. 25/- per 2×25 c.p. tant. to 11 p.m.; pr. 3	Sl. scale with dis., & contract	36,556	Data to Dec. 31, 1909	236
arc, 205 Nernst	2,062 H.P. ..	..	4,540 KW.	..	Lg. 3½ (arc 2½); pb. lg. arc £18 p.a; pr. 1 or £4 per KW. & ½ p.u.	Flat rate	{3,453,403	.. ..	237
arc, 217 tl., 51 N.	500=3,093 KW.	..	4,598 KW.	20	Lg. 6 & 2, 3½ or 1½ & 3½; arcs 2½; pb. lg. 1½; pr. 1½ & ½; rdrs. 1½	Max. dem., fl. rate, sl. sc.; 2-r.mtr, t.sw.&spl.	3,183,691	Data to March 31, 1910	238
.. ..	..	..	7,884 KW.	4	Lg. 5½ & under; pr. 1½	Flat rate	3,806,366	Data to Dec. 31, 1909	239
.. ..	..	..	85,915 KW.	1.3	Average obtained, lg. & pr. 2.49	Max. dem., flat rate, sl. sc. & 2-rate mtr.	25,454,485	Data to Dec., 1909	240
.. ..	*	..	82,388 KW.*	10.2*	Lg. 5 (bus.), 5½; pr. 2½ to 1¼; htg. 1½	Flat rate, sl. scale & contract	14,736,103*	Data to Dec. 31, 1909. *Jointly with Wandsworth.	241
3 arc, 908 mtl.	175=1,393 H.P.	..	4,317 KW.	..	Lg. 3½ (baset. 2, midnight to sunset); pb. lg. 1.2; pr. 1	Flat rate	..	Data to Mar. 31, 1910	242
.. ..	..	..	6,695 KW.	..	Lg. 6 w. dis.; pr. by agreement	Flat rate, & agreement with dis.	3,611,839	*Also Blackheath, Catford, C. Palace, &c., and parts of Lambeth & Camberwell. Data to Dec. 31, 1909	243
arc, 4 mtl.	2,715 KW.	..	6,360 KW.	..	Lg. 3½, or 6 & 1; pb. lg. arc £13, £12, £11; pr. 1½*	Max. demand and flat rate*	4,785,053 (estimated)	*Also £1 per KW. per qr. & ½d. p.u.; churches 3d. p.u. Data to Mar. 31, 1910	244
arc, 522 mtl.	386=4,588 H.P.	..	7,400 KW.	..	Lg. 3; pb. lg. arc £20 and £7½ p.a.; pr. 1½ to 1	Flat rate	..	.. ..	245
arc, 12 mtl.	97=540 H.P.	..	11,546 KW.	..	Lg. 6 & 1½, or 4*; pb. lg. arc £26½ p.a.; pr. 1 & 1½; htg. 1½	Max. demand and flat rate	4,421,527	* Arc lighting 3½d. & 1¼d. Data to Mar. 31, 1909 ..	246
15 arc, 31 mtl.	484=2,392 H.P.	..	7,959.6 KW.	6	Lg. 3½; pb. lg. £15,734 p.a.; pr. 1	Flat rate, sliding scale & contract	4,789,694	Data to Mar. 31, 1910	247
arc ..	75=351 H.P.	..	8,253 KW.	4.9	Lg. 5½ to 4 (shops &c. 3½, bts. 3 to 2); pb. lg. 1; pr. 1 subject to ld. factor*	Flat rate with discounts	2,723,817	*Heating 2d. Data to Dec. 31, 1909	248
arc ..	66=228 H.P.	..	6,030 KW.	14	Lg. 5 w. dis. to 20%; pb. lg. 1; pr. 2 to ½	Sliding scale or flat rate	2,117,077	*Inc. steam plant, battery & motor-generators. Bulk supply from Wood Lane Works. Data to Dec. 31, 1909	249
arc ..	233=1,180 H.P.	..	13,000 KW.	6.5	Lg. 5 to 3; pb. lg. 1; pr. 3 to 1	Flat rate & sl. sc. with discounts	5,723,800	*Motor-generators, 4,000 KW.; 1,800 KW. received from Wood Lane Works. Data to Dec. 31, 1909	250
.. ..	..	..	..	..	.. ..	..	9,025,877	Bulk supply to Cos. named; motor-genrs., 6,000 KW. in 5 sub-stns. Res. eng. C. M. Bennett. Data to Dec. 31, '09	251
arc ..	492=3073 H.P.	..	7,350 KW.	12	Lg. 7 & 2, or 4½; pr. spl. rates..	Max. dem., flat rate & contract	3,705,208	Data to Dec. 31, 1909	252
arc ..	3,980 H.P. ..	(L. B. & S. C. Ry.)	12,027 KW.	10.77	Lg. 5½ to 3½, or 6 & 3; pr. 2½ to ¾	Sliding scale or max. demand	10,308,537	*Berm'sey, Ch'sea, D'ford, Gr'wich, So'wark, C'well, Fins'y & L'beth. †Also 25—, 3-ph. Tr. 6,600 v. Data to 31.12.'09	253
arc, 2,179 mtl.	732=2,117 H.P.	..	19,085 KW.	7	Lg. 8 & 1 (flat rate 2 for day load, etc.); pb. lg. 1.42; pr. 2 & 1	M. d., t. sw., sl. mr., cont. w. dis. & tele.§	10,300,000	*On feeders. †Exc. htg. & ckg. §Telephone system—annual payment + 1d. per unit. Data to Mar. 31 1910	254
..	5,186 KW. .. (inc. htg.)	..	25,431 KW.*	5.4	Lg. 5 to 5½; pr. 3 & ½; trade 5 to 3	Max. demand, flat rate, & 2-rate mtr.	11,900,970	*Including bulk supply to Acton. †On feeders. Data to Dec. 31, 1909	255
arc, 556 tl.	549=7,096.6 H.P.	..	9,106 KW.	..	Lg. 5 & 3; pb. lg. 1½; pr. 1½, or £3 per KW. and 0.8d. p.u.	Max. demand, flat rate, cont. & spec.	5,845,692	Data to March, 1909	256
arc ..	1,845 KW., mtr. 686 KW., htg.	..	11,865 KW.	1.2	Lg. 5½ & 4 (basements 3 & 2); pb. lg. arc £17 p.a.; pr. 1	Flat rate & sliding scale	9,504,438	Motor-generators, 4,340 KW.; bulk supply from Central Electric Supply Co., Ltd. Data to Dec. 31, 1909	257
arc ..	942=4,635 H.P.	..	12,633 KW.	13	Lg. 6 & 1½, or 4; pb. lg. 3; pr. 1	Max. demand and flat rate	7,535,952	3-ph. A.C. 5,000 volts. 50~ to sub-stations. Data to Mar. 31, 1909	258
arc ..	810=3,998 H.P.	..	6,667 KW.	..	Lg. 5 & 2, or 4; pb. lg. 2½; pr. £3 per H.P. & 2d. p.u.; htg. 1	Max. demand, flat rate and cont.	4,873,411	Data to Mar. 31, 1909	259
mtl. ..	547 H.P. ..	..	1,600 KW.	3	Lg. 6 to 2¾; pb. lg. 3½ & 3½; pr. 2½ to 1½	Flat rate & sl. scale	1,647,015	*Including wiring, maintenance, & lamp renewals. Data to Dec. 31, 1909	260
01 arc, 38 mtl.	132=699 H.P.	..	2,078 KW.	18	Lg. 6 & 1, or 4½; pb. lg. £902; pr. 3 & 1, or 2½; htg. 1	Max. dem., flat, con. & special	1,583,110	Data to Mar. 31, 1910	261
rc, 122 mt., 08 N.	905=7,243 H.P.	592 KW. bulk	11,558 KW.	23.8	Lg. 8 & 1, or 6 & 0.9; pb. lg. 6 & 0.9; pr. 1*	Max. demand and flat rate	8,009,174	*Or 5s. per HP. per month, & ½d. per unit. Data to Mar. 31, 1910	262
e ..	25=70 KW.	..	16,049 KW.	4	Lg. 7 & 2, or 5; pr. 5 & 1, 4 & 1, or 3, 2	Max. dem., flat rate, 2-rate mr. & cont.	252,485	*Bulk supply at 10,000 v. from North Met. E. P. S. Co Supply also from Destructor. Data to Sept. 30, 1909	263
..	*	..	32,388 KW.*	10.2*	Lg. 5 (bus.), 5½; pr. 2½ to 1¼; htg. 1½	Flat rate, sl. scale & contract	14,736,109*	Data to Dec. 31, 1909. *Jointly with Finsbury	264
arc, 212 inc.	8,510 KW. pr. & htg.	..	32,567 KW.	3.3	Lg. 5½, 4½ & 3½; pb. lg. arc £22 less 4%; pr. 1	Sliding scale and flat rate	18,546,818	*Of this 9,230 KW. in motor-generators; bulk supply from Central Elec. Supply Co. Data to Dec. 31, 1909	265
.. ..	..	..	..	..	Bulk supply	Flat rate	17,282,370	*Resident engineer, H. P. Gaze. Bulk supply to Westminster & St. James Cos. Data to Dec. 31, 1909	266
arc ..	14,508 H.P....	..	34,445 KW. + bulk	6.9	Lg. 5 to 3; pr. 3 to ¾	Flat rate, sliding scale & contract	25,068,827	*Bulk supply 1,000 v. Data to Dec. 31, 1909	267
, 154 inc., Nernst	320 H.P.	..	1,703 KW.	..	Lg. 7 & 2½, or 4; pr. 2 to 1½ ..	Max. demand, flat rate & scale	1,000,000	*200 v., A.C., 50~ 1-ph., for Eltham only	268
rc, 97 cbn. mtl.	72=462 H.P.	..	1,071 KW. ..	23.4	Lg. 6 & 1½, or 4½*; pr. 2 to 1; htg. 1	Max. dem., flat rate & sliding scale	711,869	*Pb. lg. arc £18 18s., inc. (32 c.p.) £3 4s. p.a. Data to Mar. 31, 1910	269
.. ..	..	..	161 KW. ..	..	Lg. 3½	Flat rate	..	.. ..	270
, 290 inc., Nernst	57=140 H.P.	..	628 KW.	..	Lg. 3½ to 2; pb. lg. 2; pr. 2½ to ¾	Flat rate & scale ..	..	.. ..	271
rc ..	69=206 H.P.	..	543 KW.	..	Lg. 8 & 2, or 6; pr. 2½ to 1 (all less 5%)	Max. demand, flat rate & sl. scl. w. dis.	188,573	Data to Mar. 31, 1910	272
rc, 38 mtl.	90=480 H.P.	..	800 KW. ..	22	Lg. 4 (factories 3); pb. lg. 2½; pr. 1	Flat rate & 2-rate meter	356,056	Data to Mar. 31, 1910	273
, 439 inc.	90=493 H.P.	40=1,000 H.P.	2,530 KW.	8.6	Lg. 4½; pb. lg. 3; pr. 2 & 1½; tr. 1½	Flat rate	1,062,949	Lighting & traction. Data to Sept. 30, 1909	274
l. ..	6=5½ H.P. ..	..	76 KW.	..	Lg. 7 with discounts; pb. lg. 4; pr. 4 & 2	Flat rate with discounts	18,100	Data to Dec. 1908	275
e, 24 inc., Nernst	114=545 H.P.	..	1,142 KW.	..	Lg. 6 & 2, or 4; pb. lg. 2; pr. 2, 1½ & 1	Max. demand, flat rate & sl. scale	..	.. ..	276
mtl. ..	2=3 H.P. ..	..	40 KW.	..	Lg. 6; pb. lg. contract; pr. 6 ..	Flat rate & contract	..	.. ..	277
tl., 47 N.	26=93.75 H.P.	..	588.82 KW.	3.5	Lg. 7 & 4, or 2½; pb.lg. £2¼ & £2⅜ p.a.; pr. 4 & 1½, or 2½	Max. demand & flat rate	124,198	Data to Dec. 31, 1909	278
n., 33 mtl.	4=15 H.P. ..	..	192 KW.	4	Lg. 5; pb. lg. inc. £2½ p.a.; pr. 2½	Flat rate, 2-rate mtr. and contract	118,322	Water power only. Data to Mar. 25, 1910	279
e. ..	..	..	77.5 KW.	..	Lg. 4½, or 1s. per c.p. p.a.; pb. lg. total £180 p.a.	Flat rate and contract	..	Part water power. *T. Smith, Astley, proprietor. ..	280
e, 104 N., mtl.	33=125 H.P.	..	767 KW.	..	Lg. 5; pb. lg. arc £18½ to £10, inc. £3 p.a.; pr. 2 to 1½	Flat rate and max. demand	..	.. ..	281
rc., 440 210 N.	1,461 H.P. ..	40=1,000 H.P.	2,135 KW.	13.5	Lg. 6 & 1½, or 4; pb. lg. 1.4; pr. 2 to .9; htg. 1; tr. 1.25	Max.dem.cont.& flat rate; sl. sc. for pr.	1,637,640	Lighting and traction. *Traction. Data to Mar. 31, 1910	282
30 mtl.	66 KW. ..	..	266 KW.	15.6	Lg. 4½ to 6; pr. 1½ upwards, sl. scale	Flat rate & sliding scale	..	Norton supplied from Malton. *C.W. Fairweather (Mgr.). Cons. engrs. Merz & McLellan. Data to Mar. 31, 1910	283
..	14=38.5 H.P.	..	492.5 KW.	7.4	Lg. 6, first 2½ units per 8-C.P. per qr., all above, 4; pr. 3	Special scale and flat rate	151,375	Data to Mar. 31, 1910	284
..	4,181=38,590 H.P.	See other Table	54,740 KW. (ex. tr.)	13.6	Lg. 3½ or £7 per KW. + 1½ p.u.; pb. lg. 1½; pr. 1½ to .7; tr. 1 aprx	Max. dem., fl. rate, sl. scale., t sw. & spl.	71,561,976	Lighting and traction, three stations. *Also 240 and 400 v. A.C.; tr. 500 v. D.C. Data to March 31, 1910	285
arc, 12 ernst	84=268 H.P.	42=1,306 H.P.	1,939 KW.	16.9	Lg. 7 & 1 or 4; pr. 4 & 1; tr. 1½ to 1; htg. 1	Max. demand, flat, 2-rate, & time switch	974,065	Lg. & tr. Comparative decrease in output due to metal lamps. *Incl. destructor, £13,400. Data to Mar. 31, '10	286
, 60 mtl.	5=10 H.P.	..	163 KW.	..	Lg. 4½; pb. lg. arc £12½, mtl. £3½ p.a.	Flat rate	60,000	Overhead mains. *Private lg. 230 volts 2-wire; public lg. 110 volts 3-wire. Data to April 15, 1910	287
e ..	40=110 KW.	120=2400 H.P.	880 KW. (ex. tr.)	..	Lg. 5 with discount; pb. lg. 2½; pr. 3 with discount	Flat rate with discounts	1,654,000	Lighting and traction station. Data to Sept. 30, 1909	288
..	111.5 KW., inc. htg.	..	320 KW. ..	8	Lg. 7 & 4; pr. 2½	Max. demand & flat rate	57,255	Data for 1909	289
., 44 N.	12=31 H.P.	..	111 KW.	15	Lg. 6; pb. lg. 3; pr. 3; htg. 1½	Flat rate	23,304	*Resident engineer S. Johnston. Gas power. Data to Dec. 31, 1909	290
.;	51=141 H.P.	..	595 KW.	0.4	Lg. 5½; pb. lg. £225 p.a.; pr. 4 & 1½, or 2½	Lg. flat & contract; pr. m.d. & flat	227,679	Data to Dec. 31, 1909	291
6 mtl.	32=1,060 H.P.	32=1,060 H.P.	1,799 KW.	10	Lg. 7 & 2* or 5½; pb. lg. £3 & £3 3s. pr. pair; pr. 4½ & 1½; tr. 1½; htg. 1	Max. dem.*, 2-rate mtr. and flat rate	740,953	Lighting and traction. * Max. average, 3¾d. Data to Dec. 31, 1909	292
tl. ..	..	..	26.5 KW.	19.3	.. ..	Flat rate and contract	12,100	Data to Mar. 25, 1910	293
rc, 200 20 mtl.	12=64 H.P.	..	500 KW.	2	Lg. 8, 3½, 4; pb. lg. 2.08; pr. 1½, 2, 2½	Flat rates	316,148	Data to Mar. 31, 1910	294
..	1,460 H.P.	..	3,120 KW.	..	Lg. 6 & 2, or 4; pr. 2 & 1	Max. demand & flat rate	1,663,000	Motors on hire-purchase system. Data to Mar. 31, 1909	295
, 36 cbn.	67=450 H.P.	See other	860·5 KW.	..	Lg. 4 to 3; pb. lg. 3; pr. 3 to	Flat rate and	..	Lighting and traction; local Tramways Council Mtr.	

264	WANDSWORTH	County of London Electric Supply Co., Ltd.	1897	C. P. Sparks ..	200 & 410	50 ~, 3-ph.	7,500	4,350	..	£1,708,959*	*	..	*	
265	WESTMINSTER ..	Westminster Electric Supply Corporation, Ltd.	1891	Sir A. B. W. Kennedy	200 & 400	Direct ..	17,225*	10,169	..	£1,143,025	23,574 KW.	966 arc, 212 inc.	8,510 KW. pr. & htg.	
266	WESTMINSTER & ST. JAMES	Central Electric Supply Co., Ltd.	1902	Sir A. B. W. Ken'dy S. T. Dobson*	6,000	50~, 3-ph.	12,880	8,616	450 A.W. (stn. htg.)	£582,066	..	..	..	
267	WESTMINSTER, HOLBORN & CITY OF L.	Charing Cross, West End & City Electricity Supply Co.	1891	H. W. Kingston	100, 200 & 400*	Direct ..	29,920	12,792	3,075 KW. (normal)	£2,408,667	22,051 KW.	166 arc ..	14,508 H.P. ..	
268	WOOLWICH, PLUMSTEAD & ELTHAM	Woolwich Corporation ..	1898	G. W. Keats ..	210 & 420*	Direct* ..	1,728	737	..	£163,965	1,372 KW.	77 arc, 154 inc., 18 Nernst	330 H.P.	
269	LONDONDERRY	Londonderry Corporation ..	1894	R. V. Macrory ..	220 & 440	Direct ..	700	494	500 A.H.	£54,532	591 KW.	185 arc, 97 cbn. 8 mtl.	72=462 H.P.	
270	LONG EATON	Harrington Electric Light Co., Ltd.	1897	W. B. Smith ..	115	Direct ..	210	120	..	£5,430	133 KW.	..	..	
271	LONG EATON	Long Eaton Urban District Council	1903	F. Worrall ..	220	Direct ..	450	242	..	£22,864	465 KW.	2 arc, 200 inc., 92 Nernst	57=140 H.P.	
272	LONGTON	Longton Corporation	1901	W. Langford ..	230	Direct ..	600	193	22 KW.	£27,882	390 KW. ..	23 arc ..	69=206 H.P.	
273	LOUGHBOROUGH ..	Loughborough Corporation ..	1904	W. H. Allen ..	220 & 440	Direct ..	500	389	166 KW.	£32,065	372 KW.	12 arc, 38 mtl.	90=480 H.P.	
274	LOWESTOFT	Lowestoft Corporation ..	1901	G. A. Bruce ..	230 & 460	Direct ..	1,475	901	..	£86,137	1,348 KW.	81 arc, 439 inc.	90=493 H.P.	40=
275	LUDLOW	Ludlow Electric Light Co., Ltd.	1907	Edwards and Armstrong	230	Direct ..	75	80	57.5 KW.	£4,020	70 KW.	2 mtl. ..	6=52 H.P. ..	
276	LUTON	Luton Corporation	1901	W. H. Cooke ..	250 & 500	Direct ..	647	353	120 KW.	£36,679	633 KW...	10 arc, 24 inc., 3 Nernst	114=545 H.P.	
277	LYME REGIS	Lyme Regis Electric Light & Power Co.	1909 (June 1)	.. .. ..	110	Direct ..	50	..	38.5 KW.	£3,500	31 KW.	122 mtl. ..	2=8 H.P. ..	
278	LYMINGTON	Lymington Electric Light & Power Co., Ltd.	1900	C. L. Holman ..	240 & 480	Direct ..	150	102.7	54.6 KW.	£36,280	451.38 KW.	67 mtl., 47 N.	26=98.75 H.P.	
279	LYNTON & LYNMOUTH	Lynton & Lynmouth Electric Light Co., Ltd.	1890	P. T. Kimmins	100	100~, 1-ph.	175	91.5	..	£8,000	165 KW.	70cbn., 33 mtl.	4=15 H.P. ..	
280	MACROOM	Macroom Electric Light Co.*	1899	D. E. McDonnell	230	100~, 1-ph.	150	47	..	..	67 KW.	97 inc. ..	..	
281	MAIDENHEAD	Maidenhead Corporation ..	1902	C. O. Milton ..	230 & 460	Direct ..	406	275	100 KW.	£42,000	677 KW...	55 arc, 104 N., 50 mtl.	33=125 H.P.	
282	MAIDSTONE	Maidstone Corporation ..	1901	E. E. Hoadley ..	230 & 460, tr. 500	Direct ..	1,250	988	188 KW.*	£77,000	966 KW.	72 arc., 440 mtl., 210 N.	1,461 H.P. ..	40=
283	MALTON & NORTON	Northern Counties Electricity Supply Co., Ltd.	1904	A. E. Squires (Res.)*	230 & 460	Direct ..	180	93	..	..	200 KW.	180 mtl.	66 KW. ..	
284	MALVERN	Malvern Urban District Council	1904	W. J. Rendell Baker	100 & 200	50~, 1-ph.	250	108	..	£21,000	463.9 KW.	..	14=38.5 H.P.	
285	MANCHESTER	Manchester Corporation ..	1893	S. L. Pearce ..	100, 200, & 400 D.C.*	Direct, and 50~, 3-ph.*	45,300	33,785	3,500 KW. (approx.)	£2,633,049	25,920 KW.	98 arc ..	4,181=38,590 H.P.	8
286	MANSFIELD	Mansfield Corporation ..	1903	E. Holcombe Hewlett	240 & 480 tr. 550-600	Direct ..	720	305 lg. 200 tr.	280 KW. (1 hour)	£72,936*	663 KW.	40 arc, 12 Nernst	84=268 H.P.	42=
287	MARDY (CLAM.) ..	Mardy Electric Light Co., Ltd.	1898	E. A. Davies ..	220*	Direct ..	60	49	12 KW.	£3,000	133 KW.	2 arc, 60 mtl.	5=10 H.P.	
288	MARGATE & BROADSTAIRS & S. PETERS	Isle of Thanet Electric Tramways & Lighting Co., Ltd.	1903	J. A. Forde ..	240 & 480, tr. 500-550	Direct ..	1,600	1,000	60 KW.	..	750 KW.	21 arc ..	40=110 KW.	190=
289	MARKET DRAYTON ..	Market Drayton Electric Light & Power Co., Ltd.	1903	C. F. Bottomley	240 & 480	Direct ..	90	66.5	43.2 KW.	£16,844 (1908)	219 KW.	..	111.5 KW., inc. hg.	
290	MELROSE	Electric Supply Corporation, Ltd.	1904	K. A. Scott-Moncrieff*	225 & 450	Direct ..	66	21	35 KW.	£10,330	60 KW.	2 cbn., 44 N.	12=31 H.P.	
291	MELTON MOWBRAY ..	Melton Mowbray Electric Light Co., Ltd.	1900	J. E. Edmundson	240 & 480	Direct ..	300	163	86 KW.	£40,288	414 KW.	..	51=141 H.P.	
292	MERTHYR TYDFIL ..	Merthyr Electric Traction and Lighting Co., Ltd.	1901	L. W. Dixon ..	230 & 460	Direct ..	820	lg. 372, tr. 401	300 K.W.	£50,026	656 KW...	286 mtl.	32=1,060 H.P.	32=
293	MEVAGISSEY	Mevagissey Electric Supply Co., Ltd.	1896	F. Johnson ..	110	Direct ..	15	10.4	11 KW.	..	24 KW.	57 mtl. ..	..	
294	MEXBOROUGH	Mexborough Urban District Council	1902	John Senior ..	220 & 440	Direct ..	400	230	50 KW.	£22,787	390 KW.	15 arc, 200 inc., 20 mtl.	12=64 H.P.	
295	MIDDLESBROUCH ..	Middlesbrough Corporation ..	1901	Horace M. Taylor	220 & 440	Direct ..	1,600	1,288	176 KW.	£107,000	2,027 KW.	..	1,450 H.P.	
296	MIDDLETON	Middleton Corporation ..	1902	S. Pauls	220 & 440 tr. 500	Direct ..	768	700	44 KW.	£40,255	235 KW.	18 arc, 36 cbn.	67=450 H.P.	See
297	MILFORD-ON-SEA ..	Milford-on-Sea Electric Supply Co., Ltd.	1906	L. Nicholson ..	230 & 460	Direct ..	100	..	240 A.H.	£8,000	..	..	..	
298	MINEHEAD	Minehead Electric Supply Co. Ltd.	1903	B. W. Gothard ..	220 D.C. 110 & 220 A.C.	Direct, and 50~, 1-ph.	276	180	14 KW.	£18,500	200 KW.	4 arc, 8 cbn., 47 mtl.	19=72 H.P.	
299	MIRFIELD	Mirfield Urban District Council	1905	John Lomas ..	100 & 200	50~, 1-ph.	..	35	..	£4,250	..	56 mtl. ..	8=24½ H.P.*	
300	MONMOUTH	Monmouth Corporation ..	1899	F. Windsor ..	100 & 200	60~, 1-ph.	128	66.2	..	£17,906	169.7 KW.	50 cbn., 244 mtl.	12=48 H.P.	
301	MONTROSE	North of Scotland Electric Light & Power Co., Ltd.	1901	F. Barritt Hills	240 & 480	Direct ..	282	152.7	43	£39,979	448.6 KW.	20 arc, 82 cbn., 245 mtl.	65=200½ H.P.	
302	MORECAMBE	Morecambe Corporation ..	1898	W. H. Hall ..	220	Direct ..	700	335	290 KW.-hrs.	£62,598	446 KW...	104 arc, 275 inc., 3 N.	22=99 H.P...	
303	MORLEY	Morley Corporation	1898	J. E. Ellis ..	100 & 200	60~, 1-ph.	240	180	..	£28,750	454 KW.	15 arc, 71 mtl.	43=112 H.P.	
304	MORPETH	Northern Counties Electricity Supply Co., Ltd.	1904	W. H. Bibby (Res.)*	230 & 460	Direct ..	60	48	..	..	148 KW.	..	75 KW. (inc. pr. & hg.	
305	MOTHERWELL	Motherwell Corporation ..	1901	S. Williams ..	230 & 460	Direct ..	1,410	648	100 KW.	£66,904	765.5 KW.	60 arc, 597 inc., 62 Nernst	168=1,488 H.P.	
306	MUSSELBURGH ..	Musselburgh & District Elec. Light & Traction Co., Ltd.	1904	A. A. Watkins ..	230 & 460, tr. 500	Direct ..	600	200 lg. 200 tr.	96 KW. lg. 200 KW. tr.	£51,741	272.5 KW.	20 arc ..	18=86 H.P.	82=
307	NELSON	Nelson Corporation	1892	D. Helme ..	230 & 460	Direct ..	1,000	855	..	£74,761	..	..	310 H.P. ..	20=
308	NEWBURY	Urban Electric Supply Co., Ltd.	1905	Herbert W. Bush	240 & 480	Direct ..	497	174	133 KW.	£54,852	433 KW.	..	48=248 H.P.	
309	NEWCASTLE-EMLYN & DISTRICT	Newcastle-Emlyn & District Electric Supply Co., Ltd.	1909	J. R. Parkington & Co.	110	Direct ..	50	15	..	£1,560	..	54 mtl. ..	..	
310	NEWCASTLE-ON-TYNE	Newcastle & District Electric Lighting Co., Ltd.	1890	W. D. Hunter ..	100 A.C.; 240 & 480 D.C.	80~, 1-ph., & direct	9,000	5,580	1,050 KW.	£589,527	..	..	..	
311	NEWCASTLE-ON-TYNE	Newcastle Corporation ..	1901	Ernest Hatton ..	240 & 480 tr. 550	Direct ..	5,150*	3,300*	1,200 KW.	£1,170,284* exc. arc lg.	174 KW.	415 arc, 37 Nernst	17=140 H.P.	41
312	NEWCASTLE-ON-TYNE AND TYNESIDE	Newcastle-on-Tyne Electric Supply Co., Ltd.	1889	R. P. Sloan (Man.) J. S. Watson (Tech)	240 & 480 D.C. 440 A.C.*	40~, 3-ph., and direct	44,200	42,000	1,440 KW.	£1,981,882	6,760 KW.	8 arc	22,686 KW.	Tr.
313	NEWCASTLE-UNDER-LYME	Newcastle-under-Lyme Corporation	1904	A. J. C. de Renzi	230	Direct ..	140	80	46 KW.	£9,700	160 KW.	956=80 w. inc. ..	Htg. 736 KW. 4=9 H.P. ..	Bik.
314	NEWMARKET AND EXNING	Newmarket Electric Light Co. Ltd.	1899	F. A. Simpson ..	210 & 420	Direct ..	500	303	54 KW.	£41,957	750 KW.	12 arc ..	15=87 H.P.	
315	NEWPORT & COWES	Isle of Wight Electric Light & Power Co., Ltd.	1901 and 1903	A. E. Mayes (Asst. H. Banks)	240 & 480	Direct ..	380	280	Nt. 48 KW. Cs. 144 KW.	£84,049	855 KW.	80 arc, 60 cbn., 5 N.	62=200 KW.	
316	NEWPORT (MON.) ..	Newport Corporation	1895	H. Collings Bishop	100 & 200 A.C. 260 D.C.*	87.5~, 1-ph. & direct	3,050†	1,050	164 KW. for 10 hrs.	£271,983	5,392 KW.	177 arc, 145 mtl., 95 N.	213=1657 H.P.	88=
317	NEWQUAY	Newquay Electric Light & Power Co., Ltd.	1903	A. S. Hawkins ..	230 & 460	Direct ..	200	110	35 KW.	£17,500	330 KW.	10 cbn., 200 mtl.	1=20 H.P. ..	
318	NEWTON ABBOT ..	Urban Electric Supply Co., Ltd.	1903	G. E. Smith ..	240 & 480	Direct ..	180	149	168 KW.	£48,474	238 KW.	24 arc, 1 cbn. 612 mtl.	28=168 H.P.	
319	NORTHALLERTON ..	Northallerton Electric Light & Power Co., Ltd.	1899	F. R. Batty ..	230	Direct ..	150	100	33.7 KW.	£7,773 (wrtn. dn.)	132.5 KW.	31 arc, 70 inc.	33=98 H.P.	
320	NORTHAMPTON ..	Northampton Electric Light & Power Co., Ltd.	1891	G. H. Jackson ..	210 & 420	Direct ..	2,040	957	35 KW.	£188,534	1,678 KW.	..	1,238 H.P. ..	
321	NORTHWICH	Northwich Electric Supply Co., Ltd.	1897	W. Boyd ..	220 & 440	Direct ..	415	198	220 KW.	£34,998	556.8 KW.	61 mtl. ..	70=481 H.P.	
322	NORWICH	Norwich Corporation	1898	F. M. Long ..	220 & 440	Direct ..	3,504	2,650	800 KW.	£229,303	4,228 KW.	20 arc ..	485=2,662 H.P.	
323	NOTTINGHAM	Nottingham Corporation ..	1894	H. Talbot ..	220 & 400	Direct ..	10,951	6,485	100 KW.	£467,260	..	92 arc ..	1,040=4,169 H.P.	
324	NUNEATON	Nuneaton Corporation ..	1900	S. C. Gibson ..	220 & 440	Direct ..	600	329	40 KW.	£33,000 (approx.)	712 KW.	20 arc. 95 mtl.	66=276 H.P.	
325	OBAN	Oban Corporation	1903	Malcolm Sutherland	220 & 460	Direct ..	240	132*	72 KW.	£24,007	251 KW.	33 arc, 64 cbn., 122 mtl.	18=106 H.P.	
326	OGMORE VALLEY ..	Ogmore Valley Electric Light & Power Supply Co., Ltd.	1901	A. E. Marks ..	210 to 220	40~, 1-ph., & direct	300	150	..	£8,958	120 KW.	210 inc. ..	..	
327	OLDHAM	Oldham Corporation	1894	S. W. Newington	210 & 420 tr. 500	Direct ..	5,222	3,318	..	£295,475	..	23 arc, 16 mtl.	..	See
328	OSWESTRY	Oswestry Electric Light and Power Co., Ltd.	1896	E. B. Smith ..	220	Direct ..	225	123	6.6 KW.	£12,680	173 KW.	..	3=12 H.P. ..	
329	OULTON BROAD ..	Oulton Broad Electricity Co...	1902	B. Barber ..	230	Direct ..	45	18	14 KW.	£3,200	88.5 KW.	32 inc. ..	1=5 H.P. ..	
330	OXFORD	Oxford Electric Co., Ltd. ..	1892	F. H. Francis ..	160	Direct, & 50~, 3-ph.	1,550	1,206	90 KW.	£196,001	3,142 KW.	32 arc, 48 mtl.	183=218 H.P.	
331	PAIGNTON	Paignton Electric Light and Power Co., Ltd.	1908*	F. E. Frampton	220 & 440	Direct ..	75	85	53 KW.	£11,000	11.5 KW.	14 arc, 4 mtl.	6=4 H.P. ..	
332	PAISLEY	Paisley Corporation	1899	C. F. Parkinson ..	200 A.C. tr. 500 D.C.	50~, 1, 2 & 3-ph., & direct	2,400 lg. 1,800 tr.	788 lg. 983 tr.	..	£193,190 (1900)	2,410 KW.	94 arc, 9 mtl.	113=602 H.P.	104=
333	PARTICK	Partick Corporation	1902	W. Sillery ..	240 & 480	Direct ..	2,450	1,088	150 KW.	£185,400	1,997 KW.	322 arc, 310 mtl.	273=2,725 H.P.	
334	PEMBERTON	Wigan Corporation	1902	James Slevin ..	220 & 460 tr. 550	Direct ..	900	127 lg. 983 tr.	75 KW.	£48,649	120 KW.	12 arc, 34 cbn., 206 mtl., 80 N.	17=149 H.P.	(see
335	PEMBROKE (DUBLIN) ..	Pembroke Urban District Council	1900	S. L. R. Price ..	220 & 440	Direct ..	600	304	192 KW. for 2½ hrs.	£70,500	664 KW.	87 arc, 163 cbn., 96 mtl.	15=61 H.P.	
336	PENARTH	Penarth Electric Lighting Co., Ltd.	1901	H. Cameron ..	220, 460 & 500	Direct ..	530	291	40 KW.	..	771 KW.	110 mtl. ..	10=120 H.P.	
337	PENRITH	Penrith Electric Supply Co., Ltd.	1900 (June 4)	Dundas Fox ..	110 & 220	Direct ..	100	20	8.8 KW.	£6,500	20 KW.	..	4=4½ H.P. ..	
338	PERTH	Perth Corporation	1901	J. Lambert ..	220 & 460	Direct ..	1,175	693	276 KW.	£58,798	859 KW.	84 arc, 86 mtl.	61=277 H.P.	24=
339	PETERBOROUGH ..	Peterborough Corporation ..	1900	J. C. Gill ..	240 & 400	Direct ..	840	508	72 KW. lg. 72 KW. tr.	£54,792	711 KW.	119 arc, 4 cbn., 45 mtl.	69=200 H.P.	28=
340	PLYMOUTH	Plymouth Corporation ..	1899	E. G. Okell ..	100 & 200 tr. 500 D.C.	50~, 1-ph. D.C. for tr.	2,800	1,480	297 KW. for 5 hrs.	£155,340	2,250 KW.	80 arc ..	88=309 KW.	86=
341	PONTYPOOL	Pontypool Electric Light & Power Co., Ltd.	1898	G. Elwell ..	103	Direct ..	169	188	21 KW.	£11,412	125 KW. (approx)	6 arc ..	12=64 B.H.P.	
342	PONTYPRIDD ..	Pontypridd Urban District Council	1905	J. E. Teasdel ..	230 & 460 tr. 500	Direct ..	900	788	496 KW.	£58,527	618 KW.	39 arc ..	31=120 H.P.	52=
343	PORTPATRICK ..	Portpatrick Electric Supply Co., Ltd.	1904	.. .. ..	200 & 400	Direct ..	50	..	..	..	..	..	..	
344	PORTSMOUTH	Portsmouth Corporation ..	1894	W. S. Forde ..	200	50~, 1-ph.	2,500	1,500	100 KW.	£200,000	4,000 KW.	250 arc ..	200 KW.	

..	*	..	32,328 KW.*	10.2*	Lg. 5 (bus.), 5½; pr. 3½ to 1½; htg. 1½	Flat rate, sl. scale & contract	14,766,10-	Data to Dec. 31, 1909. *Jointly with Pinner[illegible]	264
arc, 212 inc.	8,510 KW. pr. & htg.	..	32,567 KW.	8.3	Lg. 5½, 4½ & 3½; pb. lg. arc £22 less 4%; pr. 1	Sliding scale and flat rate	18,546,818	*Of this 9,230 KW. in motor-generators; bulk supply from Central Elec. Supply Co. Data to Dec. 31, 1909	265
..	..	..	..	..	Bulk supply	Flat rate	17,282,370	*Resident engineer, H. P. Gane. Bulk supply to Westminster & St. James Cos. Data to Dec. 31, 1909	266
re ..	14,508 H.P...	..	34,445 KW. + bulk	6.9	Lg. 5 to 3; pr. 3 to ¾	Flat rate, sliding scale & contract	25,068,837	*Bulk supply 1,000 v. Data to Dec. 31, 1909	267
, 154 inc., Nernst	890 H.P.	..	1,708 KW.	..	Lg. 7 & 2½, or 4; pr. 2 to 1½ ..	Max. demand, flat rate & scale	1,000,000	*200 v., A.C., 50~ 1-ph., for Eltham only	268
c, 97 cbn. mtl.	72=462 H.P.	..	1,071 KW...	23.4	Lg. 6 & 1½, or 4½*; pr. 2 to 1; htg. 1	Max. dem., flat rate & sliding scale	711,869	*Pb. lg. arc £18 18s., inc. (32 c.p.) £3 4s. p.a. Data to Mar. 31, 1910	269
..	..	..	161 KW...	..	Lg. 8½	Flat rate	..	.. ..	270
, 290 inc., Nernst	57=140 H.P.	..	628 KW.	..	Lg. 3½ to 2; pb. lg. 2; pr. 2½ to ¾	Flat rate & scale ..	..	.. ..	271
rc ..	69=206 H.P.	..	543 KW.	..	Lg. 8 & 3, or 6; pr. 2½ to 1 (all less 5%)	Max. demand, flat rate & sl. scl. w. dis.	188,573	Data to Mar. 31, 1910	272
c, 38 mtl.	90=480 H.P.	..	800 KW...	22	Lg. 4 (factories 3); pb. lg. 2½; pr. 1	Flat rate & 2-rate meter	356,056	Data to Mar. 31, 1910	273
, 439 inc.	90=493 H.P.	40=1,000 H.P.	2,530 KW.	8.6	Lg. 4½; pb. lg. 3; pr. 2 & 1½; tr. 1½	Flat rate	1,062,949	Lighting & traction. Data to Sept. 30, 1909	274
l. ..	6=53 H.P. ..	..	76 KW.	..	Lg. 7 with discounts; pb. lg. 4; pr. 4 & 2	Flat rate with discounts	18,100	Data to Dec. 1908	275
e, 24 inc., ernst	114=545 H.P.	..	1,142 KW.	..	Lg. 6 & 2, or 4; pb. lg. 2; pr. 2, 1½ & 1	Max. demand, flat rate & sl. scale	..	.. ..	276
ntl. ..	2=8 H.P. ..	..	40 KW.	..	Lg. 6; pb. lg. contract; pr. 6 ..	Flat rate & contract	..	.. ..	277
l., 47 N.	26=98.75 H.P.	..	588.82 KW.	3.5	Lg. 7 & 4, or 2½; pb. lg. £2½ & £2½ p.a.; pr. 4 & 1½, or 2½	Max. demand & flat rate	124,198	Data to Dec. 31, 1909	278
., 83 mtl.	4=15 H.P. ..	..	102 KW.	4	Lg. 5; pb. lg. inc. £2½ p.a.; pr. 2½	Flat rate, 2-rate mtr. and contract	118,822	Water power only. Data to Mar. 25, 1910	279
c. ..	..	..	77.5 KW.	..	Lg. 4½, or 1s. per c.p. p.a.; pb. lg. total £180 p.a.	Flat rate and contract	..	Part water power. *T. Smith, Astley, proprietor. ..	280
, 104 N., mtl.	33=125 H.P.	..	767 KW.	..	Lg. 5; pb. lg. arc £18½ to £10, inc. £8 p.a.; pr. 2 to 1½	Flat rate and max. demand	..	.. ..	281
rc., 440 210 N.	1,461 H.P. ..	40=1,000 H.P.	2,185 KW.	13.5	Lg. 6 & 1½, or 4; pb. lg. 1.4; pr. 2 to .9; htg. 1; tr. 1.25	Max.dem.cont.& flat rate; sl. sc. for pr.	1,637,640	Lighting and traction. *Traction. Data to Mar. 31, 1910	282
0 mtl.	66 KW. ..	..	266 KW.	15.6	Lg. 4½ to 6; pr. 1½ upwards, sl. scale	Flat rate & sliding scale	..	Norton supplied from Malton. *C.W. Fairweather (Mgr.). Cons. engrs. Merz & McLellan. Data to Mar. 31, 1910	283
..	14=88.5 H.P.	..	492.5 KW.	7.4	Lg. 6, first 2½ units per 8-C.P. per qr., all above, 4; pr. 3	Special scale and flat rate	121,375	Data to Mar. 31, 1910	284
..	4,181=38,590 H.P.	See other Table	54,740 KW. (ex. tr.)	13.6	Lg. 8½ or £7 per KW. + 1½ p.u.; pb. lg. 1½; pr. 1½ to .7; tr. 1 aprx	Max. dem., fl. rate, sl. scale., t sw. & spl.	71,561,976	Lighting and traction, three stations. *Also 240 and 400 v. A.C.; tr. 500 v. D.C. Data to March 31, 1910	285
are, 12 ernst	84=268 H.P.	42=1,300 H.P.	1,939 KW.	16.9	Lg. 7 & 1 or 4; pr. 4 & 1; tr. 1½ to 1; htg. 1	Max. demand, flat, 2-rate, & time switch	974,065	Lg. & tr. Comparative decrease in output due to metal lamps. *Incl. destructor, £13,400. Data to Mar. 31, '10	286
, 60 mtl.	5=10 H.P. ..	..	163 KW.	..	Lg. 4½; pb. lg. arc £12½, mtl. £9½ p.a.	Flat rate	60,000	Overhead mains. *Private lg. 220 volts 2-wire; public lg. 110 volts 3-wire. Data to April 15, 1910	287
e ..	40=110 KW.	120=2400 H.P.	830 KW. (ex. tr.)	..	Lg. 5 with discount; pb. lg. 2½; pr. 3 with discount	Flat rate with discounts	1,654,000	Lighting and traction station. Data to Sept. 30, 1909	288
..	111.5 KW., inc. hg.	..	320 KW. ..	8	Lg. 7 & 4; pr. 2½	Max. demand & flat rate	57,255	Data for 1909	289
., 44 N.	12=31 H.P.	..	111 KW.	15	Lg. 6; pb. lg. 3; pr. 3; hg. 1½	Flat rate	23,204	*Resident engineer S. Johnston. Gas power. Data to Dec. 31, 1909	290
..	51=141 H.P.	..	595 KW.	0.4	Lg. 5½; pb. lg. £325 p.a.; pr. 4 & 1½, or 2½	Lg. flat & contract; pr. m.d. & flat	227,679	Data to Dec. 31, 1909	291
3 mtl.	32=1,060 H.P.	32=1,060 H.P.	1,799 KW.	10	Lg. 7 & 2* or 3½; pb. lg. £3 & £3 3s. pr. pair; pr. 4½ & 1½; tr. 1½; htg. 1	Max. dem.*, 2-rate mtr. and flat rate	740,952	Lighting and traction. * Max. average, 8¾d. Data to Dec. 31, 1909	292
tl. ..	..	..	26.5 KW.	19.3	.. ..	Flat rate and contract	12,100	Data to Mar. 25, 1910	293
rc. 200 20 mtl.	12=64 H.P.	..	500 KW.	2	Lg. 3, 3½, 4; pb. lg. 2.08; pr. 1½, 2, 2½	Flat rates	310,148	Data to Mar. 31, 1910	294
..	1,450 H.P.	..	3,120 KW.	..	Lg. 6 & 3, or 4; pr. 2 & 1	Max. demand & flat rate	1,663,000	Motors on hire-purchase system. Data to Mar. 31, 1909	295
, 36 cbn.	67=450 H.P.	See other Table	360·5 KW. (ex. tr.)	..	Lg. 4 to 3; pb. lg. 3; pr. 2 to 1 less 5%; tr. 1½ to 1	Flat rate and sliding scale	..	Lighting and traction; local Tramway Co. and Manchester Corporation supplied. Data to Mar. 31, 1908	296
..	..	..	..	..	.. ..	..	..	Suction gas plant	297
, 8 cbn., mtl.	19=72 H.P.	..	310 KW.	10.8	Lg. 5; pb. lg. 3; pr. 2	Flat rate, contract & special	103,175	Gas power. Supply has been extended to Dunster. Data to Dec. 31, 1909	298
l. ..	8=24½ H.P.*	..	134.4 KW.	25	Lg. 4½; pb. lg. 1; pr. 2 & 1 ..	Flat rate, & sliding scale with dis.	33,659	*Fans and radiators, 8 H.P. Data to Mar. 31, 1909 ..	299
on., 244 l.	12=48 H.P.	..	201.8 KW.	6.2	Lg. 5½; pb. lg. £512 p.a.; pr. 3; tr. 2	Flat rate .. .	112,728	Water power. Data to Mar. 31, 1910	300
, 82 cbn., 5 mtl.	65=200½ H.P.	..	665 KW.	1.6 (dec.)	Lg. 6 & 4, or 5½; pb. lg. £850 p.a.; pr. 4 (peak) & 1½, or 2½	Max. dem., flat, 2-rate meter, & contract	182,481	Data to Dec. 31, 1909	301
are, 275 , 3 N.	22=99 H.P...	..	633 KW.	..	Lg. 5 & 6; pb. lg. arc 1s. 3d. per night, inc. 4½d. p. u.; pr. 3	Flat rate	204,145	.. ..	302
, 71 mtl.	42=112 H.P.	..	534 KW.	..	Lg. 6 w. dis. to 25%; pb. lg. arc £32 p.a.; pr. 2½ to ⅝ less 2½%	Flat rate with discounts	177,337	Output again decreased owing to almost universal use of mtl. lamps in this town. Data to Mar. 31, 1910	303
..	75 KW. (inc. pr. & hg.	..	218 KW.	..	Lg. 4; pr. 2½ to 1½	Flat rate & sliding scale	..	*C. W. Fairweather (Mgr.) Cons. engs., Merz & McLellan. Data to Dec. 31, 1909	304
, 597 inc., Nernst	163=1,438 H.P.	..	2,033 KW.	..	Lg. 3½; pb. lg. arc £15, inc. £3½ & £2, N. £3½ p.a.; pr. 2 to ¾	Flat rate and sliding scale	..	.. ..	305
e ..	18=86 H.P.	32=800 H.P.	926 KW. (ex. tr.)	4.1	Lg. 6 & 1½, or 4; pb. lg. 2½, pr. 3 & 1½; tr. 1½	Max. demand, flat rate & contract	562,981	Lighting and traction. Lighting output reduced by use of metallic filament lamps. Data to Dec 31, 1910	306
..	310 H.P. ..	20=500 H.P.	..	..	Lg. 4 to 3; pr. 2½ to 1½ less 5%; tr. 2	Sliding scale ..	936,580	Lighting and traction. Data to Mar. 31, 1910	307
tl. ..	48=248 H.P.	..	650 KW.	15.4	Lg. 7 & 3, or 6; pr. 2½ & 1 ..	Max. demand, flat rate & contract	219,790	Gas and water power. Data estd. to June 30, 1910 ..	308
..	..	..	..	..	Lg. 6; pb. lg. contract; pr. 2 ..	Flat rate & contract	..	Water power. Supply commenced Sept. 20, 1909. Data to April 30, 1910	309
..	..	..	19,981 KW.	6	Lg. 3½ net; pr. 1½ max... ..	Flat rate, sliding scale, & contract	10,875,205	Large power load. Data to Dec 31, 1909	310
are, 37 ernst	17=140 H.P.	418=12,450 H.P.	..	..	Lg. 2 to 2½; pr. 1½	Flat rate & sliding scale	134,821	*Lighting and traction. Light and power supplied to public buildings only. Data to Mar. 31, 1910	311
arc 30 w. inc.	22,686 KW. Htg. 736 KW.	Tr. 12,200 KW. Blk. 41,009 KW.	97,000 KW.	16	Lg. 8½ less 5%; pb. lg. inc. £2/15/6 p.a.; pr. 1½ w. dis.	Flat rate w. dis., time sw., cont. & special	..	Lg. & tr. Cons. engs., Merz & McLellan (see other table Power Cos.). *Tr. 500 & 600 v. Data to Dec. 31, 1909	312
..	4=9 H.P. ..	..	167 KW.	12	Lg. 6; pr. 3	Flat rate & special	61,500	Gas power; town gas at 1s. 9d. per 1,000 cubic ft. Data to Mar. 31, 1908	313
e ..	15=37 H.P.	..	785 KW.	4.2	Lg. 7 & 4, or 6; pb. lg. arc £3½ p. a.; pr. 4 & 1½	Max. demand and flat rate	158,349	Data to Dec. 31, 1908	314
, 60 cbn., N.	62=200 KW.	..	1,140 KW.	9	Lg. 7 & 4, or 6; pr. 4 & 1½, or 2½	Max. demand and flat rate	342,546	Supply from N. to C. at 2,500 volts D.C. Data to Dec., 1908	315
arc, 145 , 95 N.	213=1657 H.P.	88=2,040 H.P.	5,392 KW.	..	Lg. 4 & 3; pb. lg. arc £16, N. £2½ p.a.; pr. 2 to 1; htg. 1; tr. 1.35	Flat w. dis., sl. sc., 2-rate meter & time sw.	3,615,783	Lighting and traction. *Tr. 500. †Two gen. stns.; energy sold to tramways Data to Mar. 31, 1909	316
,200 mtl.	1=20 H.P. ..	..	400 KW.	..	Lg. 6; pr. 3	Flat rate & contract	..	.. ..	317
, 1 cbn. mtl.	28=168 H.P.	..	544 KW.	10	Lg. 7 & 3, or 6; pb. lg. contract; pr. 4 & 1½, or 2½	Max. demand, flat rate and contract	248,520	Data to Dec. 31, 1909	318
e, 70 inc.	33=98 H.P.	..	236 KW.	..	Lg. 6; pb. lg. arc 13/-, inc. 8/9 & 3/-, per 100 hrs.; pr. 4 to 1½	Flat rate w. dis., sl. scale & contract	95,178	Data to Dec. 31, 1908	319
..	1,239 H.P. ..	..	2,890 KW.	15.5	Lg. 6 & 3, or 5 (pr. ho. 4½*); pr. 2 to 1; htg. 1½	Max. demand, flat & sl. scale w. dis.*	1,416,790	*Alternative, 12½% per annum on assessment, and 1½ per unit for energy used for dom. pur. Data to Dec. 31, '09	320
tl. ..	70=481 H.P.	..	963.7 KW.	7.4	Lg. 6 & 4; pb. lg. 2.4; pr. 2½ & 1, or 2 & 1	Max. demand and flat rate	289,485	A. W. Selater, Cons. eng. Mond gas power. Data to Dec. 31, 1909	321
e ..	485=2,662 H.P.	..	6,581 KW.	11	Lg. 4½*; pb. lg. 1; pr. 3 to ¾ ..	Flat rate, sliding scale & special*	4,056,869	Purchased from Co. in 1902. *Also 12% on assessment and 1d. p.u. Data to Mar. 31, 1909	322
e ..	1,040=4,169 H.P.	..	12,380 KW. (ex tr.)	..	Lg. 5 & 1½; pb. lg. 5 & 1½; pr. 1½; tr. 1½	Max. demand & flat rate	11,469,735	Lighting and traction. Data to Mar. 31, 1910	323
are. 95 ntl.	66=276 H.P.	..	1,005 KW.	10.8	Lg. 5 to 2; pb. lg. arc £8, mtl. £3½ p.a.; pr. 2½ to 1	Flat rate & sliding scale*	393,712 (approx)	*Alternative tariff based on assessment, with low charge per unit. Data to March 31, 1910 (est.)	324
,64 cbn., mtl.	18=106 H.P.	..	342 KW.	..	Lg. 6; pr. 3 to 1½	Lg. flat rate, pr. sl. scale, with dis.	109,838 (est.)	*On feeders. Data to May 15, 1909..	325
ne. ..	..	..	200 KW. ..	..	Lg. 3, 4, 4½; pb. lg. contract ..	Sliding scale & contract	..	Data to April 20, 1909	326
, 16 mtl.	..	See other Table	4,980 KW. (ex. tr.)	12.5	Lg. 4 & 1½; pb. lg. 2½; pr. 2 to 1; tr. 1½ to 1½	Max. demand, flat, sl. scale & 2-rate	5,720,381	Lighting and traction. Data to Mar. 25, 1910	327
..	8=12 H.P. ..	..	183 KW.	..	Lg. 6½ w. dis.; pr. 3 (minimum 10/- per H.P.)	Max. demand and flat rate	97,800	Data to Dec. 31, 1909	328
e. ..	1=5 H.P. ..	..	96 KW.	..	Lg. 6½; pb. lg. £2½ p.a.; pr. 3..	Flat rate with rebate	20,000	Output reduced due to use of metallic filt. lamps. Data to Dec. 25, 1909	329
e, 48 mtl.	183=218 H.P.	..	3,461 KW.	10	Lg. 6 w. dis.; pb. lg. 2½; pr. 1½ w. dis.	Flat rate with discounts	1,199,844	Data to Dec. 31, 1910	330
e, 4 mtl.	6=4 H.P. ..	..	97 KW.	..	Lg 6; pr. 3..	Flat rate with discounts for power	23,886	*Supply commenced Dec. 25, 1908. Data to May 1, 1910	331
e, 9 mtl.	113=602 H.P.	104=2,000 H.P.	5,292 KW.	4.8	Lg. 4; pb. lg. arc £25 p.a.; pr. 1½ to ¾; tr. 2 to 1½	Flat rate & sliding scale	2,400,651	Lighting and traction. Data to May 15, 1910	332
are, 310 mtl.	372=2,725 H.P.	..	8,577 KW.	..	Lg. 3½, or 6 & 1; pb. lg. 0.9; pr. 1	Flat rate & max. demand	2,050,000 (approx.)	Data estimated to May 15, 1910	333
34 cbn., l., 30 N.	17=149 H.P.	(see Wigan).	249 KW.	..	Lg. 5, 4, 3; pb. lg. 3; pr. 2 to 1; tr. 1½	Flat rate with disc., & time sw.	754,989	Lighting and traction. Data to Mar. 31, 1910	334
163 cbn., mtl.	15=91 H.P.	..	777 KW...	24	Lg. 4½; pb. lg. arc £20, inc. £3½ & £6½ p.a.; pr. 4½ & 1½; htg. 1½	Flat rate, 2-rate mtr. w. time sw., & cont.	291,088	Data to Dec. 31, 1907	335
ntl. ..	10=120 H.P.	..	821 KW.	9.8	Lg. 7 & 2, or 4½; pb. lg. 54s. per 50 c.p. lp. p.a.; pr. 4½, 1½ & 1	Max. dem., flat rate, & sl. scale	369,918	Data to Dec. 31, 1909	336
..	4=4½ H.P. ..	..	65 KW.	..	Lg. 5; pr. 2½ to 1½	Flat rate	..	Suction gas plant. Data to March 31, 1910	337
, 86 mtl.	61=277 H.P.	24=840 H.P.	1,136 KW.	..	Lg. 8½ to 2½; pb. lg 1½; pr. 2½ to 1½; tr. 1½	Flat rate	932,365	Lighting and traction. Data to May 15, 1909	338
4 cbn., mtl.	69=300 H.P.	28=560 H.P.	1,414 KW.	4.2	Lg. 4½ & 4; pb. lg. £13; pr. 1½; tr. 2½ to 1½	Flat rate and sl. scale	620,778	Lighting and traction. Data to April 18, 1910 (est.) ..	339
..	88=300 KW.	86=1,689 KW.	4,240 KW.	..	Lg. 3½ to 2½; pb. lg. arc £21 p.a.; pr. 1½; tr. 1½	Flat rate, w. rebate 12 mt. to 8 p.m.	2,004,154	Lighting and traction. Data for 1906-7	340
..	12=64 B.H.P.	..	200 KW. (approx)	1	Lg. 6; pb. lg. 3; pr. 2 & 2 ..	Flat rate	94,648	Data to Dec. 31, 1909	341
..	31=180 H.P.	52=1,924 H.P.	2,210 KW.	..	Lg. 7 & 1, or 3½ (sc.); pb. lg. 1½; pr. 1½ & 1; tr. 1½	Max. demand and sliding scale	1,072,926	Lighting and traction. Data to Mar. 31, 1909	342
..	..	..	..	..	.. ..	..	..	.. ..	343

330	OXFORD	Oxford Electric Co., Ltd.	1892	F. H. Francis	100	Direct, & 50~, 3-ph.	1,550	1,266	90 KW.	£196,001	3,142 KW.	32 arc, 48 mtl.	138=213 H.P.	
331	PAIGNTON	Paignton Electric Light and Power Co., Ltd.	1908*	F. E. Frampton	220 & 440	Direct ..	75	35	53 KW.	£11,000	11.5 KW.	14 arc, 4 mtl.	6=4 H.P. ..	
332	PAISLEY	Paisley Corporation	1899	C. F. Parkinson..	200 A.C. tr. 500 D.C.	50~, 1, 2 & 3-ph., & direct	2,400 lg. 1,800 tr.	733 lg. 982 tr.	..	£193,190 (1900)	2,410 KW.	94 arc, 9 mtl.	113=602 H.P.	10
333	PARTICK	Partick Corporation	1902	W. Sillery ..	240 & 480	Direct ..	2,450	1,088	150 KW.	£135,400	1,387 KW.	322 arc, 310 mtl.	272=2,725 H.P.	
334	PEMBERTON	Wigan Corporation	1902	James Slevin ..	230 & 460 tr. 550	Direct ..	900	127 lg. 982 tr.	75 KW.	£43,649	120 KW.	12 arc, 84 cbn., 206 mtl., 30 N.	17=149 H.P.	(
335	PEMBROKE (DUBLIN)	Pembroke Urban District Council	1900	S. L. R. Price ..	220 & 440	Direct ..	600	304	192 KW. for 2½ hrs.	£70,500	664 KW.	87 arc, 162 cbn., 26 mtl.	15=61 H.P.	
336	PENARTH	Penarth Electric Lighting Co., Ltd.	1901	H. Cameron ..	230, 460 & 500	Direct ..	530	291	40 KW.	..	771 KW.	110 mtl. ..	10=120 H.P.	
337	PENRITH	Penrith Electric Supply Co., Ltd.	1909 (June 4)	Dundas Fox ..	110 & 220	Direct ..	100	20	8.8 KW.	£6,500	20 KW.	..	4=4½ H.P. ..	
338	PERTH	Perth Corporation	1901	J. Lambert ..	230 & 460	Direct ..	1,175	693	276 KW.	£58,798	859 KW.	84 arc, 36 mtl.	61=277 H.P.	2
339	PETERBOROUCH	Peterborough Corporation ..	1900	J. C. Gill ..	200 & 400	Direct ..	840	508	72 KW. lg. 72 KW. tr.	£54,792	711 KW.	119 arc, 4 cbn., 45 mtl.	69=300 H.P.	2
340	PLYMOUTH	Plymouth Corporation ..	1899	E. G. Okell ..	100 & 200 tr. 500 D.C.	50~, 1-ph. D.C. for tr.	2,800	1,480	237 KW. for 5 hrs.	£155,340	2,250 KW.	80 arc ..	88=309 KW.	86
341	PONTYPOOL	Pontypool Electric Light & Power Co., Ltd.	1893	G. Elwell ..	103	Direct ..	169	138	21 KW.	£11,412	125 KW. (apprx)	6 arc ..	12=64 B.H.P.	
342	PONTYPRIDD	Pontypridd Urban District Council	1905	J. E. Teasdel ..	220 & 460 tr. 500	Direct ..	900	788	495 KW.	£68,527	618 KW.	39 arc ..	31=120 H.P.	5
343	PORTPATRICK	Portpatrick Electric Supply Co., Ltd.	1904	..	200 & 400	Direct ..	50	..	..	..	..	..	..	
344	PORTSMOUTH	Portsmouth Corporation ..	1894	W. S. Foale ..	100	50~, 1-ph.	4,450	2,790	100 KW.	£330,788	6,696 KW.	332 arc,* 463 cbn.	299=1,099 H.P.	
345	PRESCOT & DISTRICT	British Insulated & Helsby Cables, Ltd.	1891	R. P. Nash ..	100 A.C., 250 & 550 D.C.	100~, 1-ph. & direct	1,760	1,430	..	£71,169	420 KW.	23 arc, 144 cbn., 123 mtl.	175=3,051 H.P.	8
346	PRESTON	National Electric Supply Co., Ltd.	1893	J. H. Tonge ..	220 A.C., 220 & 440 D.C.	50~, 1-ph., & direct	2,630	1,359	88 KW.	£185,842	3,209 KW.	64 arc ..	319=1,401 KW. (inc. hg.)	
347	PUDSEY	Pudsey Corporation	1905	Edward Denton	230 & 460	Direct ..	110	28	..	£5,412	68 KW.	20 mtl. ..	18=20 H.P.	
348	QUEENSTOWN	Cork Electric Tramways & Lighting Co., Ltd.	1900	W. H. Joyce ..	230 & 460	Direct ..	230	107	270 A.H.	£26,546	213 KW.	15 arc, 24 cbn.	6=34½ H.P.	
349	RADCLIFFE	Radcliffe Urban District Council	1904	H. Wilkinson ..	220 & 440 tr. 525	Direct ..	790	530	88 KW.	£31,393	317 KW.	15 arc, 8 mtl.	60=397 H.P.	8
350	RAMSCATE	Ramsgate and District Electric Supply Co., Ltd.	1905	C. E. Hume ..	240 & 480	Direct ..	590	233	150 KW.	£45,386	683 KW.	..	54=210 KW.	
351	RATHMINES	Rathmines Urban District Council	1900	G. F. Pilditch ..	220 & 440	Direct ..	750	397	400 KW.	£118,429	967 KW.	108 arc, 220 cbn., 272 mtl.	11=41.5 H.P.	
352	RAWMARSH	Me borough & Swinton Tramways Co.	1907	P. Priestly (Res.)	230 & 460 tr. 500	Direct ..	1,000	500	200 & 400 KW.	..	221 KW.	96 mtl. ..	6=19½ H.P.	4
353	READING	Reading Electric Supply Co., Ltd.	1895	E. Rowley Hill..	200 & 400 D.C. 200 A.C.	Direct, & 67~, 1-ph.	2,150	1,318	200 KW.	£167,779	2,290 KW.	..	260=1,731 H.P.	
354	REDDITCH	Redditch Urban District Council	1899	W. J. Ferguson..	200	66~, 1-ph.	544	350	..	£36,789	292.4 KW.	320 inc. ..	23=163 H.P.	
355	REICATE	Reigate Corporation	1901	W. S. Ross ..	200	50~, 1-ph.	480	249	..	£45,000	710.5 KW.	87 mtl. ..	26=66½ H.P.	
356	RHYL	Rhyl Urban District Council	1901	E. H. Wright ..	230	Direct ..	495	221	33 KW.	£26,990	375 KW.	58 arc, 8 inc.	19=20 H.P.	
357	RICHMOND (SURREY)	Richmond (Surrey) Electric Light & Power Co., Ltd.	1893	L. C. B. Trimnell	220 & 440	Direct ..	1,150	604	55 KW.	£138,183	2,231 KW.	..	118=319 KW.	
358	ROCHDALE	Rochdale Corporation ..	1900	C. C. Atchison ..	220 & 440,* tr. 500	Direct & 50~, 3-ph.*	2,476	827 lg. 1,415 tr.	180 A.H.	£97,318	1,300 KW.	..	260=1,573 H.P.	126
359	ROSS	Ross Electric Light & Power Co., Ltd.	1902	Chas. E. Gray ..	230	Direct ..	100	35.6	50 KW.	£6,300	103 KW.	8 mtl. ..	5=10 H.P. ..	
360	ROTHERHAM	Rotherham Corporation ..	1901	Edward Cross ..	230 & 460, tr. 520	Direct ..	1,653*	1,031	46 KW.	£57,443	978 KW.	..	110=959 H.P.	74
361	ROTHESAY	Rothesay Corporation ..	1899	E. B. Stiven ..	230 & 460	Direct ..	34	24	..	£3,000	..	33 arc, 34 inc.	..	
362	ROTTINGDEAN	New Rottingdean Electricity Co., Ltd.	1895	J. W. Brown ..	100	Direct ..	43	..	..	..	33 KW.	13 inc. ..	1 H.P. ..	
363	ROUNDHAY	Roundhay & District Electric Lighting Co., Ltd.	1903	H. Fox	230 & 460	Direct ..	160	109	600 A.H.	£15,000	3,255 KW.	30 Nernst ..	10 H.P. ..	
364	RUGBY	Rugby Urban District Council	1903	Thos. S. Shenton	220	50~, 3-ph.	210	200	..	£13,388	465 KW.	..	16=37½ H.P.	
365	RUGBY SCHOOL	Rugby School Electric Lighting Co., Ltd.	1896	A. E. Lee ..	100	100~, 1-ph.	85	64	..	£4,500	167 KW.	..	..	
366	RYDE & ST. HELENS	Isle of Wight Elec. Lt. & Pr. Co., & St. Helens El. Lg. Co.	1903	A. E. Mayes (Ast. H. Groome)	240 & 480	Direct, & 50~, 1-ph.	350	160	144 KW.	£32,504	560 KW.	96 mtl. ..	50=80 H.P. ..	
367	ST. ALBANS	North Metropolitan Electrical Power Distribution Co., Ltd.	1908	T. E. Eachus (res.)	230 & 460	Direct ..	..	122	..	£15,473	226 KW. ..	..	240 KW. ..	
368	ST. ANDREWS	Electric Supply Corporation, Ltd.	1905	K. A Scott-Moncrieff*	225 & 450	Direct ..	300	88.8	80 KW.	£24,340	420 KW.	4 arc, 8 cbn.	50=188½ H.P.	
369	ST. ANNES-ON-SEA	St. Annes-on-Sea Urban District Council	1901	J. H. Clothier ..	240, tr. 500	Direct ..	750	327 lg. 330 tr.,	18 KW.	£48,794	1,316 KW.	44 arc, 32 cbn., 106 mtl., 169 N.	40=70 H.P.	80
370	ST. AUSTELL	St. Austell & District Electric Lighting & Power Co., Ltd.	1886	T. Hill	110 & 220	Direct ..	120	62	46 KW.	£8,000	112 KW.	117 Nernst..	11=50 H.P.	
371	ST. HELENS	St. Helens Corporation ..	1896	E.M.Hollingsworth	230 & 460 tr. 500	Direct ..	1,340	1,111	510 KW.	£150,000	1,864 KW.	161 Nernst	240=1,620 H.P.	8
372	SALE	Sale Urban District Council..	1903	C. J. Wood ..	230 & 460	Direct ..	100	75	80 KW.	£9,700	350 KW. ..	10 arc, 4 cbn., 190 mtl.	8=20 H.P. ..	
373	SALISBURY	Salisbury Electric Light & Supply Co., Ltd.	1898	A. B. Randall ..	210	Direct ..	600	332	134 KW.	£72,360	914 KW. ..	19 cbn., 14 mtl.	68=180 B.H.P.	
374	SALTBURN	Cleveland Trust, Ltd... ..	1899	C. W. Thompson	220	Direct ..	170	79	92 KW.	£14,000	352 KW. ..	..	12=60 H.P. ..	
375	SCARBOROUCH	Scarborough Electric Supply Co., Ltd.	1893	F. G. Holden ..	200 A.C. 500 D.C.	80~, 1-ph., & direct	1,945	872	175 KW.	£110,695	1,783 KW.	..	299 H.P. ..	44
376	SHANKLIN & SANDOWN	Isle of Wight Electric Light & Power Co., Ltd.	1901	A. E. Mayes .. (Assist. L. Gillett)	240 & 480	Direct ..	425	218	40 KW.	£56,205	514 KW. ..	15 arc, 206 cbn. 236 mtl., 69 N.	40=40 H.P.	
377	SHEERNESS AND QUEENBOROUCH	Sheerness & District Elec. Power & Traction Co., Ltd.	1903	G. L. Kirk ..	220, 440 A.C. 230, 460 D.C.*	Direct, & 50~, 3-ph.	700	346	..	£50,426	332 KW.	..	372 H.P.	30
378	SHEFFIELD	Sheffield Corporation.. ..	1894	S. E. Fedden ..	200 A.C.	50~, 2-ph	10,900 (two stns.)	6,870	..	£970,000 (approx.)	7,807 KW.	65 arc ..	1,421=14,004 H.P.	
379	SHILDON	Northern Counties Electricity Supply Co., Ltd.	1905	T. Heron (Res.)*	230 & 460	Direct ..	120	80	..	..	198 KW.	47 KW. ..	30 KW. ..	
380	SHIPLEY	Shipley Urban District Council	1901	S. D. Schofield .	230 & 460 tr. 500	Direct ..	1,170	822	750 A.	£65,341	516 KW.	42 arc, 3 inc.	89=680 H.P.	1
381	SHREWSBURY	Shrewsbury Corporation ..	1895	C. M. Johnston	210 & 420	Direct ..	780	383	..	£54,000	800 KW. ..	51 arc, 56 cbn., 529 mtl.	85=198 H.P.	
382	SLEAFORD	Sleaford Urban District Council	1902	W. Henry Wilson	220	Direct ..	180	70	18 KW.	£11,118	114 KW. ..	16 arc, 90 cbn., 40 mtl.	12=40 H.P.	
383	SLOUCH & DATCHET	Slough and Datchet Electric Supply Co., Ltd.	1903	A. E. Farrow ..	220 & 440	Direct ..	580	250	88 KW.	£44,886	348 KW.	108 mtl. ..	27	
384	SMETHWICK & OLDBURY	Birmingham & Midland Tramways Joint Committee	1904	S. A. Mahood ..	250 & 500 D.C. 400 AC*	Direct & 25~, 3-ph.,	6,500	3,000	7.5 KW.	..	300 KW...	..	4,020 H.P. ..	140
385	SOUTHAMPTON	Southampton Corporation ..	1891	H. F. Street ..	200	Direct ..	2,200	1,470	1,500 KW.	£179,351	1,882 KW.	92 arc, 66 inc., 6 Nernst	40=200 H.P.	50
386	SOUTHEND-ON-SEA	Southend Corporation ..	1902	Robert Birkett ..	230 & 460, tr. 500	Direct ..	2,050	1,438	50 KW.	£123,000 (approx.)	..	99 arc, 50 cbn., 41 mtl., 117 N.	60=340 H.P.	8
387	SOUTHPORT	Southport Corporation ..	1894	A. S. Black ..	100 & 210 A.C. 500 D.C.	50~, 1-ph., & direct	2,350	1,577	400 KW.	£200,895	3,543 KW.	75 arc, 150 inc.	90=609 H.P.	40
388	SOUTH SHIELDS	South Shields Corporation ..	1896	J. H. Cawthra ..	110 & 220 tr. 550 D.C.	50~, 1-ph., & direct	2,700	1,776	517 KW.	£185,000	2,415 KW.	94 arc, 484 × 2 cbn.	90=2,500 H.P.	70
389	SPENNYMOOR	Northern Counties Electricity Supply Co., Ltd.	1902	H. Puttick (Res.) C. W. Fairweather	230 & 460 D.C. 440 A.C.	Direct & A.C.	400*	187	..	..	405 KW.	21 KW. ..	157 KW. (inc. pr. & hg.)	
390	STAFFORD	Stafford Corporation	1896	H. Pooley ..	210 & 420	Direct ..	565	280	300 KW.	£32,500	..	8 arc ..	74=345 H.P.	
391	STALYBRIDGE	Stalybridge, Hyde, Mossley, & Dukinfield Tr. & El. Bd.	1904	Robert Blackmore	230 D.C., 400 A.C., tr. 500	40~, 3-ph., & direct	7,500	4,800	..	£250,000	500 KW. ..	..	250=6,000 H.P.	120
392	STAMFORD	Urban Electric Supply Co., Ltd.	1902	J. E. Edmundson	240 & 480	Direct ..	380	232	600 A.H.	£51,190	526 KW. ..	5 arc, 10 cbn.	107=509 H.P.	
393	STIRLING	Stirling Corporation	1900	J. W. Papworth	230 & 460	Direct ..	638	274	30 KW.	£41,590	621 KW.	60 arc, 46 cbn., 214 mtl.	84=273 H.P.	
394	STOCKPORT	Stockport Corporation ..	1898	R. Lomax ..	230 & 460 tr. 500	Direct ..	2,050	1,440	200 KW.	£51,000	892 KW.	49 arc, 2 inc., 1 Nernst	73=428 H.P.	90
395	STOCKTON-ON-TEES	Stockton-on-Tees Corporation	1900	J. J. Smith ..	230 & 460	Direct ..	1,050	590	75 KW.	£54,300 (approx.)	765 KW. ..	44 arc ..	121=880 KW.	
396	STOKE-ON-TRENT & FENTON	Stoke-on-Trent Corporation..	1904	P. J. S. Tiddeman	240 & 480	Direct ..	800	545	50 KW.	£36,500	640 KW. ..	..	1,000 KW. ..	
397	STOWMARKET	Suffolk Electricity Supply Co., Ltd.	1896	Napier Prentice	100	Direct ..	78	42	50 KW.	..	100 KW. ..	..	25=40 H.P.	
398	STRATFORD-ON-AVON	Stratford-on-Avon Electricity Co., Ltd.	1907	Cecil D. Falcke	220 & 440	Direct ..	100	75.2	36 KW.	£10,538	172.5 KW.	..	18=138½ H.P. Hlg. 15 KW.	
399	STRETFORD	Stretford Urban District Council	1903	R. Rowland ..	220 & 440, tr. 550	Direct ..	1,500	1,548	200 KW.	£84,500	750.7 KW.	99 arc, 133 mtl.	59=406.5 H.P.	Sec
400	SUNDERLAND	Sunderland Corporation ..	1895	A. S. Blackman	220 D.C.* 220 & 240 A.C.	Direct, & 50~, 3-ph.	9,593	4,425	481 KW.	£424,456	2,954 KW.	215 arc, 92 mtl.	1,002=7,548 KW.	144
401	SURBITON	Surbiton Urban District Council*	1903	T. M. Colson ..	240 & 480	Direct ..	380	215	90 KW.	£59,046	999 KW.	2 Nernst ..	23=45½ H.P.	
402	SUTTON, CARSHALTON WALLINGTN & CHEAM	South Metropolitan Electric Tramways & Lighting Co.	1902	A. V. Mason ..	200 A.C., tr. 500 D.C.	50~, 1-ph., & direct	1,500	577	..	£80,538	964 KW.	3 arc, 476 mtl., 2 Nernst	26=143.25 H.P.	2
403	SUTTON COLDFIELD	Sutton Coldfield Corporation	1901	T. Duesbury ..	230 & 460	Direct ..	625	263	90 KW.	£42,596	813 KW.	14 arc, 209 mtl.	30=128 KW.	
404	SWANSEA	Swansea Corporation..	1901	C. A. L. Prusmann	220 & 440 tr. 550	Direct and 50~, 1-ph.	2,325	1,367	78 KW.	£153,240	2,274 KW.	74 arc, 80 mtl.	1,748 H.P. ..	
405	SWINDON	Swindon Corporation.. ..	1903	A. Dimmack ..	220 & 440 tr. 550	Direct ..	900	639	44 KW.	£57,381	975 KW.	21 arc, 341 mtl.	362 H.P. ..	24
406	SWINTON & PENDLEBURY	Swinton & Pendlebury Urban District Council	1907	H. C. Busbridge (Res.)*	250 & 500	Direct ..	150	60	..	£11,400	146 KW.	2 arc, 16 mtl.	18=73.5 H.P.	
407	TAUNTON	Taunton Corporation.. ..	1888*	E. B. Thornhill	105 & 210 tr. 560 D.C.	60~, 1-ph., & direct	1,100	570	..	£70,111	980 KW.	72 arc, 44 cbn., 230 mtl.	104=820 H.P.	12
408	THIRSK AND SOWERBY	Northern Counties Electricity Supply Co., Ltd.	1903	J. A. Carr (Res.)*	230 & 460	Direct ..	95	63	..	..	119 KW.	13 KW. ..	2 KW. ..	
		[illegible]en Corporation ..	1905	Henry Talbot ..	230	Direct ..	225	103	13.8 KW.	£20,000	186 KW.	..	31=55 KW.	

rc, 48 mtl.	133=218 H.P.	..	3,461 KW.	10	Lg. 6 w. dis.; pb. lg. 2½; pr. 1½ w. dis.	Flat rate with discounts	1,199,844	Data to Dec. 31, 1910	330
rc, 4 mtl.	6=4 H.P. ..	..	97 KW.	..	Lg 6; pr. 3..	Flat rate with discounts for power	23,886	*Supply commenced Dec. 25, 1908. Data to May 1, 1910	331
rc, 9 mtl.	113=602 H.P.	104=2,600 H.P.	5,292 KW.	4.8	Lg. 4; pb. lg. arc £25 p.a.; pr. 1½ to ¾; tr. 2 to 1½	Flat rate & sliding scale	2,400,651	Lighting and traction. Data to May 15, 1910	332
arc, 310 mtl.	272=2,725 H.P.	..	2,577 KW.	..	Lg. 3½, or 6 & 1; pb. lg. 0.9; pr. 1	Flat rate & max. demand	2,050,000 (approx.)	Data estimated to May 15, 1910	333
c, 84 cbn., tl., 80 N.	17=149 H.P.	(see Wigan).	249 KW.	..	Lg. 5, 4, 3; pb. lg. 3; pr. 2 to 1; tr. 1½	Flat rate with disc., & time sw.	754,989	Lighting and traction. Data to Mar. 31, 1910	334
, 163 cbn., 6 mtl.	15=91 H.P.	..	777 KW. ..	24	Lg. 4½; pb. lg. arc £20, inc. £3½ & £6½ p.a.; pr. 4½ & 1½; htg. 1½	Flat rate, 2-rate mtr. w. time sw., & cont.	291,088	Data to Dec. 31, 1937	335
mtl. ..	10=120 H.P.	..	821 KW.	9.3	Lg. 7 & 2, or 4½; pb. lg. 54s. per 50 c.p. lp. p.a.; pr. 4½, 1½ & 1	Max. dem., flat rate, & sl. scale	369,918	Data to Dec. 31, 1909	336
..	4=4½ H.P. ..	..	65 KW.	..	Lg. 5; pr. 2½ to 1½	Flat rate	..	Suction gas plant. Data to March 31, 1910	337
e, 86 mtl.	61=277 H.P.	24=840 H.P.	1,136 KW.	..	Lg. 3½ to 2½; pb. lg 1½; pr. 2½ to 1½; tr. 1½	Flat rate	982,365	Lighting and traction. Data to May 15, 1910	338
rc, 4 cbn., 5 mtl.	69=200 H.P.	28=560 H.P.	1,414 KW.	4.2	Lg. 4½ & 4; pb. lg. £13; pr. 1½; tr. 2½ to 1½	Flat rate and sl. scale	620,778	Lighting and traction. Data to April 18, 1910 (est.) ..	339
rc ..	88=309 KW.	86=1,639 KW.	4,240 KW.	..	Lg. 3½ to 2½; pb. lg. arc £21 p.a.; pr. 1½; tr. 1½	Flat rate, w. rebate 12 mt. to 3 p.m.	2,004,154	Lighting and traction. Data for 1906-7	340
e ..	12=64 B.H.P.	..	200 KW. (approx)	1	Lg. 6; pb. lg. 3; pr. 3 & 2 ..	Flat rate	94,643	Data to Dec. 31, 1909	341
rc ..	31=120 H.P.	52=1,924 H.P.	2,210 KW.	..	Lg. 7 & 1, or 3½ (sc.); pb. lg. 1½; pr. 1½ & 1; tr. 1½	Max. demand and sliding scale	1,072,206	Lighting and traction. Data to Mar. 31, 1909	342
..	..	..	..	..	.. ..	..	..	.. ..	343
arc,* 463 cbn.	239=1,099 H.P.	..	7,679 KW.	..	Lg. 4 to 2½; pb. lg. arc £16 (flame £10), inc. £3 8s.; pr. 1½	Flat rate & sliding scale	3,476,730	*265 large arcs, 58 flame arc. Data to Mar. 31, 1909 ..	344
e, 144 cbn., 3 mtl.	175=3,051 H.P.	8=200 H.P.	3,889 KW.	10	Lg. 4; pb. lg. 2; pr. 1; tr. 1½	Flat rate with dis. & contract	3,392,695	Lighting and traction. Supply to Prescot Dist., S. Lanc. Trys. and B.I. & H.C. works. Data to Dec. 31, 1909	345
rc ..	319=1,401 KW. (inc. hg.)	..	4,649 KW.	6.5	Lg. 7 to 4½, less 15%; pb. lg. 1; pr. 1½ to 1 net	Max. demand & sliding scale	1,731,000	Data to Dec. 31, 1908	348
l. ..	18=20 H.P.	..	73 KW.	25.2	Lg. 4; pb. lg. 3; pr. 2	Flat rate	32,388	Large consumers supplied by the Yorkshire Electric Power Co. Data to Dec. 31, 1909	347
e, 24 cbn.	6=34½ H.P.	..	248 KW. ..	6	Lg. 6, 5 & 4½; pb. lg. arc £15, inc. £2 8s. p.a., ½ night; pr. 3 & 2½	Flat rate	126,720	Data to Dec. 31, 1909	348
e, 3 mtl.	60=697 H.P.	See other Table	830 KW.	49.5	Lg. 4 to 3; pb. lg. 2; pr. 2 to 0.9; tr. 1⅜	Sliding scale ..	1,044,532	Lighting and traction. Data to Mar. 31, 1910	349
..	54=210 KW.	..	721 KW.	45	Lg. 7 & 3 or 6; pr. 2 or 4 & 1½ (daylight 1½)	Max. dem., flat rate, 2-rate meter (pr.)	238,343	Data to Dec. 31, 1909	350
arc, 220 , 272 mtl.	11=41.5 H.P.	..	1,091 KW.	2.8	Lg. 4½ (shops & ch. 4); pb. lg. arc £16, inc. £4½ p.a.; pr. 1½	Flat rate	704,257	Data to Mar. 31, 1910	351
tl. ..	6=19½ H.P.	40=1,400 H.P.	1,366 KW.	10.7	Lg. 4½; pr. 2; pb. lg. 1½; tr. 1½	Flat rate w. dis., cont. w. t. sw.	776,996	Lighting and traction station. Data to April 30, 1910.	352
..	260=1,781 H.P.	..	4,021 KW.	9	Lg. 6 to 3 (shops 4½ to 3); pr. 1½	Sliding scale ..	1,247,927	Data to Dec. 31, 1908	353
inc. ..	23=163 H.P.	..	1,004 KW.	..	Lg. 4½ & 4; pb. lg. inc. £3 p.a.; pr. 2-1½, 1½ & 1; htg. 1½	Flat rate, 2-rate meter, sl. sc. for pr.	..	Part gas power..	354
tl. ..	26=66½ H.P.	..	760 KW.	..	Lg. 7½ & 4½, or 6; pb. lg. inc. £3 p.a.; pr. 2	Max. demand & flat rate	288,414	.. ..	355
rc, 8 inc.	19=20 H.P.	..	480 KW.	..	Lg. 6 & 3, or 5; pb. lg. 4; pr. 4 & 2	Max. demand & flat rate	..	.. ..	356
..	118=319 KW.	..	2,600 KW.	3	Lg. 5½; pr. 2½; htg. 1½	Flat rate with discounts	715,365	Data to Dec. 31, 1909	357
..	260=1,573 H.P.	120=4,260 H.P.	8,131 KW.	32.3	Lg. 6 & 2, or 4½ with dis.; pr. 2 to 7; tr. 1½ to 1	Max. dem., fl. r., sl. sc., con. w. dis., & sp.	3,545,339	Lighting and traction. *Also 3-phase 50~ at 3,000 volts. Data to Mar. 31, 1910	358
il. ..	5=10 H.P. ..	..	110 KW.	3.6	Lg. 7; pb. lg. 3½; pr. 3	Flat rate	23,710	Data to Dec. 31, 1909	359
..	110=959 H.P.	74=1,970 H.P.	3,190 KW.	13.2	Lg. 4; pr. 1½ & 1; tr. 1½ ..	Max. dem., flat rate w. dis., & sl. scale	1,978,012	Lighting and traction. Discounts to large power cons. up to 40%. *Available for both lg. & tr. Data to Mar. 31, '10	360
..	..	..	..	..	.. ..	..	..	.. ..	361
re, 34 inc.	..	..	..	..	.. ..	..	..	.. ..	362
nc. ..	1 H.P. ..	..	35 KW. ..	..	Lg. 7	Flat rate	..	.. ..	362
Nernst ..	10 H.P. ..	..	354 KW. ..	30	Lg. 6; pb. lg. 4; pr. 2	Flat rate	48,376	Gas power. Data to April 22, 1910	363
..	16=37½ H.P.	..	498 KW. ..	15	Lg. 5 less 5%; pr. 2½ & 3 ..	Flat rate with discounts	160,876	Supply from the B.T.-H. Co.'s works at 2,200 volts. Data to Mar. 31, 1909	364
..	..	..	167 KW. ..	..	Lg. 4 & 5	Flat rate	38,282	Gas power. Data to Dec. 31, 1909	365
tl. ..	50=80 H.P. ..	..	655 KW. ..	8	Lg. 7 & 4, or 6; pr. 4 & 1½, or 2½	Max. demand & flat rate	162,568	Gas power. Data to Dec., 1908	366
..	240 KW. ..	..	466 KW.	105.4	Lg. 7 & 2½, or 5; pr. 2½ & special	Max. demand & flat rate	100,848	E. T. R. Murray, eng.-in-chief. Bulk supply from N.M.E.P.S. Co. Data to Dec. 31, 1909	367
e, 8 cbn.	50=138⅔ H.P.	..	555 KW.	24	Lg. 5; pb. lg. 3 to 1½; pr. 3; htg. 1½	Flat rate	121,478	*Resident eng. H. Dixon. Data to Dec. 31, 1909..	368
e, 32 cbn., tl., 169 N.	40=70 H.P.	80=2,000 H.P.*	2,838 KW.	7.6	Lg. 6 & 2, or 4½; pb. lg. & pr. 2½ to 1½; tr. 1½ to 1½	Max. demand & flat rate with dis.	802,734	Lighting & traction. *Energy sold to Tramway Co., 200 KW. max. demand. Data to Mar. 31, 1910	369
Nernst..	11=50 H.P.	..	151 KW.	..	Lg. 5; pb. lg. contract; pr. 2 ..	Flat rate & contract	90,000	Suction gas plant substituted for steam, 1904. Data to June 1, 1909	
Nernst	240=1,620 H.P.	See other Table	2,984 KW.	8.16	Lg. 4½ & 3½: pb. lg. 0.77; pr. 2 & 1 w. dis.; tr. 1.11 & 0.37	Lg. flat r., pr. max. dem. w. dis., tr. scale	2,484,631	Lighting and traction. Data to Mar. 31, 1909	371
re, 4 cbn., 90 mtl.	8=20 H.P. ..	..	364 KW.	4.6	Lg. 5½ & 3, or 5; pb. lg. 2; pr. 3 & 1½, or 2 with lg.	Max. demand & flat rate	91,000	No meter rents charged. Data to Mar. 31, 1910 ..	372
cbn., 14 mtl.	68=180 B.H.P.	..	1,074 KW.	1	Lg. 7, 4 & 2; pr. 4 & 1, or 2½ ..	Max. demand, and flat rate for pr.	524,043	Part water power Data to Dec. 31, 1909	373
..	12=60 H.P. ..	..	397 KW.	25	Lg. 6 to 4; pr. 2½ to 1½ ..	Sliding scale w. dis.	64,941	Part gas power. Data to Sept. 30, 1909	374
..	299 H.P. ..	44=1,540 H.P.	3,517 KW.	3	Lg. 6 to 3; pr. 2; htg. 1; tr. 1.3	Sliding scale with discounts	846,022	Lighting and traction. Data to Dec. 31, 1909	375
e, 206 cbn. tl., 69 N.	40=40 H.P.	..	640 KW.	5	Lg. 7 & 4, or 6; pr. 4 & 1½, or 2½	Max. demand & flat rate	227,368	Data to Dec. 1908	376
..	372 H.P.	300 H.P. ..	876 KW. ..	23	Lg. 4½ & 2½; pr. 2 & 1	Max. demand, flat rate & special	468,264	Lighting and traction. *Tr. 500 v. D.C. Data to Dec. 31, 1908	377
re ..	1,421=14,004 H.P.	..	22,488 KW.	18.48	Lg. 4 w. dis.; pb. lg. various rates; pr. 2 to 0.6; htg. 1	Flat rate with dis., & sl. scale for pr.	10,500,000 (approx.)	Two A.C. stns.: Neepsend 7,000 KW. turbines; Sheaf St. 3,000 KW. various types. Data to Mar. 25, 1910	378
KW. ..	30 KW. ..	..	275 KW.	..	Lg. 4; pr. 2½ to 1½	Flat rate & sliding scale	..	*C.W. Fairweather (Mgr.). Cons. engrs. Merz & McLellan. Data to Dec. 31, 1909	379
rc, 3 inc.	89=680 H.P.	948* KW.	1,083 KW.	..	Lg. 4½ & 2; pb. lg. 1½; pr. 2 & 1, or 1½; tr. 1½	Max. demand & flat rate	886,758	Lighting and traction. *Tramway max. demand ..	380
e, 56 cbn., 9 mtl.	85=198 H.P.	..	999 KW.	4.8	Lg. 6, 4 & 2, or 5; pb. lg. about 2½*; rr. 3, 2 & 1½, w. dis. to 10%	Lg. max. dem. & flat; pr. sl. scale w. dis.	531,527	*Pb. lg. arc £20 p.a., inc. £1 14s., £1, £4 and £5 p.a. Data to March 31, 1910	381
e, 90 cbn., tl.	12=40 H.P.	..	155 KW.	3	Lg. 5; pb. lg. arc £12½, glow £2 p. a.; pr. 3	Flat rate	71,492	Data to Mar. 31, 1910	382
mtl. ..	27	..	447 KW.	17.1	Lg. 4, 4½, 6; pb. lg. 3; pr. 3 ..	Flat rate with discount	250,248	Bulk supply to Windsor E. I. Co. at 3.94d. per unit. Data to Mar. 1908	383
..	4,020 H.P. ..	140=1,620 H.P.	4,530 KW.	..	Lg. 7 & 2½, or 4½; pr. 1½; tr. 1	Max. demand & flat rate	7,066,273	Lg. & tr. Tram. Cmec. holds E.L. prov. order for Smethwick & Oldbury. *Tr. 500 v. D.C. Data to March, 1910	384
e, 66 inc., Nernst	40=200 H.P.	50=1,250 H.P.	2,965 KW.	..	Lg. 4½; pb. lg. 2½; pr. 3 & 2; tr. 2½	Flat rate	..	Lighting and traction	385
e, 50 cbn., tl., 117 N.	60=340 H.P.	See other Table (ex. tr.)	3,198 KW. (ex. tr.)	12	Lg. 6 & 3, or 4½*; pb. lg. arc £13 14s. N. £2 7s. 4d.; pr. 1 & 6 or 2; tr. 1½	Max. demand, flat, 2 rate & Hopkinson	1,793,000 (estd.)	Lighting and traction. *Also £3 10s. per KW., and 1½d. p.u. Data to Mar. 31, 1909	386
e, 150 inc.	90=609 H.P.	40=1,620 H.P.	5,272 KW.	..	Lg. 6, 4, & 2, or 4½; pb. lg. arc £20 p.a.; pr. 2 & 1½; tr. 1½ to 1½	Max. demand & flat rate	2,174,722	Lighting and traction. Data to Mar., 1909	387
re, 484 × 2 cbn.	80=2,500 H.P.	70=2,100 H.P.	5,498 KW.	12.8	Lg. 7 & 1½, or 4; pb. lg. arc £2 2s*; pr. 1½ to 1; htg. 2; tr. 1.5 to 1.8	Max. dem., flat, & sl. scale w. dis.	3,200,000	Lighting & traction. *Also pb. lg. two 16-c.p. inc., £2 12s. per annum. Data to Feb. 1910	388
KW. ..	157 KW. (inc. pr. & hg.)	..	583 KW.	..	Lg. 4; pr. 1½ with discount	..	..	*Used as stand-by; bulk from Cd. & Dm. E. P. S. Co. Cons. engrs. Merz & McLellan. Data to Dec. 31, 1909	389
e ..	74=346 H.P.	..	765 KW.	..	Lg. 4 to 5; pr. 2½ to 1½	Flat rate w. dis. ..	890,010	Data to March 31, 1910	390
..	230=6,000 H.P.	120=3,600 H.P.	6,000 KW.	..	Lg. 3½, less 10 %, or 4 & 2; pr. 2½ to ½; tr. 1	Max. dem., flat, sl. sc., cont. w. dis., & 2-r.	12,000,000	Lighting & traction. Data to May 1, 1910	391
, 10 cbn.	107=509 H.P.	..	977 KW. ..	..	Lg. 7 & 3, or 5; pb. lg. £70 p.a.; pr. 4 & 1, or 2½, & special	Max. dem., flat, 2-rate, con., t. sw., & sp.	298,200	Wiring and motors on hire purchase 3, 5, or 7 years. Data to Dec. 31, 1909	392
e, 46 cbn., 14 mtl.	84=273 H.P.	..	868 KW.	19	Lg. 7 & 2, or 6 to 4½; pb. lg. 3.6; pr. 5 & 1, or 4 to 1½	Max. demand and sliding scale	380,414	Data to May 15, 1910	393
re. 2 inc., Nernst re ..	73=428 H.P.	90=3,150 H.P.	4,472 KW.	..	Lg. 4; pb. lg. arc £11½ p.a.; pr. 1½*; tr. 1½	Flat rate	1,319,000	Lighting & traction. *Special rates to large consumers	394
..	121=830 KW.	..	1,406 KW.	2	Lg. 6 & 2, or 4; pb. lg. 2.83; pr. 2 to 1½	Max. demand, flat & 2-rate (t.s.) w. dis.	838,598	Data to Mar. 31, 1910	395
..	1,000 KW. ..	..	1,640 KW.	30	Lg. 7 & 2; pr. 1½ to 0·8.. ..	Max. dem , flat, sl. sc. & cont. w. dis.	900,000	Data to Mar. 31, 1910	396
..	25=40 H.P.	..	129 KW.	..	Lg. 8 & 6; pr. 6 to 3	Flat rate	..	Gas power	397
..	18=138⅓ H.P. Htg. 15 KW.	..	290.5 KW.	29	Lg. 5; pr. 2½, 2, 1½; htg. 1½ ..	Flat rate	76,747	Greater portion of lighting done with metallic filament lamps. Data to Dec. 31, 1909	398
arc, 133 mtl.	59=406.5 H.P.	See other Table	1,055 KW. (ex. tr.)	27.8	Lg. 4½, or £7 per KW. p.a. & 1½ p.u.*; pr. 3 to 1†; tr. 1.131	Flat rate, sl. sc. & Hopkinson	2,035,951	Lg. and tr. *Pb. lg. arc £20 (½ nt. £12), inc. £2½ p.a. †Or £1 per B.H.P. per gr. & ¾d. p.u. Data to Mar. 31, 1910	399
rc, 92 mtl.	1,002=7,548 KW.	144=3,704 H.P.	13,400 KW.	4.65	Lg. 4½ w. dis. to 2¼, or 4½ & 2½†; pr. 2½ to ¾, or 2½ & 1½; tr. 1½	Max. dem., flat w. dis., t.sw., cont. & spl.	7,848,815	Lg. & tr., 2 stns *Tr. 550 v. †Pb. lg. arc £14 3. 8. Inc. due to improved shipyard wkg. Data to Mar. 31, 1910	400
ernst ..	22=45½ H.P.	..	1,032 KW.	1.6	Lg. 7 & 3, or 6; pb. lg. £8½ per lp. p.a.; pr. 4 & 1½, or 2½	Max. demand and flat rate	254,191	*Worked by Callender's Cable and Construction Co., Ltd. Data to Mar. 31, 1909	401
476 mtl., Nernst arc, 209 mtl.	26=143.25 H.P.	250 KW.	1,427.74 KW.	16.2	Lg. 5½; pb. lg. arc £17½ (½ nt.), inc. & Nernst £9⅜ p.a.; pr. 2½ & 1½	Flat rate	482,890	Data to Dec. 31, 1909	402
	30=128 KW.	..	1,041 KW.	8.4	Lg. 5½ to 4; pb. lg. 1.25; pr. 2	Sliding scale ..	868,039	Data to Mar. 31, 1910	403
arc, 80 mtl.	1,748 H.P. ..	..	3,845 KW.	16.7	Lg. 6 & 2, or 4½; pb. lg. arc £25 & £11 p.a.; pr. 2 & 1½; tr. 1½ to 1	Max. demand and flat rate	2,400,331	Lighting and traction. Arc lighting being extended. Data to Mar., 1909	404
are, 341 mtl.	332 H.P. ..	24=858 H.P.	..	..	Lg. 4, or £6 per KW. & 2 p.u; pb. lg. 2.95* av.; pr. 2 w. dis.; tr. 1 6	Max. dem., flat rate and special	849,493	Lighting & traction station. *Including maintenance Data to Mar. 31, 1910	405
e, 16 mtl.	18=73.5 H.P.	..	216 KW.	40	Lg. 4, or ls. per 30-w. lp. & 1½d. p.u.; pb. lg. 2½; pr. 1½ and 1	Flat rate†	66,773	*Lancs. Elec. Pr. Co. manage undertaking. †Alternative fixed charge per lp. & 1½d. p.u. Data to Mar. 31, 1910	406
e, 44 cbn., 30 mtl.	104=320 H.P.	12=240 H.P.	1,631 KW.	6	Lg. 6 to 3 (outside arcs 2); pr. 2; tr. 1.2	Max. demand and flat rate	632,582	Lighting and traction. *Purchased from Co. in 1893. Data to Mar. 31, 1909	407
KW. ..	2 KW. ..	..	134 KW.	..	Lg. 4½; pr. 2½ & 1½	Flat rate & sliding scale	..	*C.W. Fairweather (Mgr.). Cons. engrs. Merz & McLellan. Data to Dec. 31, 1909	408
..	31=55 KW.	..	243 KW.	27.6	Lg. 4½, or 6 & 2; pr. 2	Max. demand & flat rate	89,097	Data to Mar. 31, 1908	409

353	READING	Reading Electric Supply Co., Ltd.	1895	E. Rowley Hill	230 & 400 D.C., 200 A.C.	Direct, & 67~, 1-ph.	2,150	1,818	200 KW.	£167,779	2,290 KW.	..	260=1,731 H.P.	
354	REDDITCH	Redditch Urban District Council	1899	W. J. Ferguson	200	66~, 1-ph.	544	350	..	£36,739	292.4 KW.	320 inc.	23=163 H.P.	
355	REIGATE	Reigate Corporation	1901	W. S. Ross	200	50~, 1-ph.	480	249	..	£45,000	710.5 KW.	87 mtl.	26=66½ H.P.	
356	RHYL	Rhyl Urban District Council	1901	E. H. Wright	230	Direct	495	221	32 KW.	£26,990	375 KW.	58 arc, 8 inc.	19=20 H.P.	
357	RICHMOND (SURREY)	Richmond (Surrey) Electric Light & Power Co., Ltd.	1898	L. C. B. Trimnell	220 & 440	Direct	1,150	604	55 KW.	£138,183	2,231 KW.	..	118=319 KW.	
358	ROCHDALE	Rochdale Corporation	1900	C. C. Atchison	220 & 440,* tr. 500	Direct & 50~, 3-ph.*	2,476	827 lg. 1,415 tr.	180 A.H.	£97,318	1,300 KW.	..	260=1,573 H.P.	120
359	ROSS	Ross Electric Light & Power Co., Ltd.	1902	Chas. E. Gray	230	Direct	100	35.6	50 KW.	£6,800	103 KW.	8 mtl.	5=10 H.P.	
360	ROTHERHAM	Rotherham Corporation	1901	Edward Cross	230 & 460, tr. 520	Direct	1,653*	1,031	46 KW.	£57,443	978 KW.	..	110=959 H.P.	74
361	ROTHESAY	Rothesay Corporation	1899	E. B. Stiven	230 & 460	Direct	34	24	..	£3,000	..	36 arc, 34 inc.	..	
362	ROTTINGDEAN	New Rottingdean Electricity Co., Ltd.	1895	J. W. Brown	100	Direct	43	..	..	..	33 KW.	15 inc.	1 H.P.	
363	ROUNDHAY	Roundhay & District Electric Lighting Co., Ltd.	1903	H. Fox	230 & 460	Direct	160	109	600 A.H.	£15,000	3,255 KW.	30 Nernst	10 H.P.	
364	RUGBY	Rugby Urban District Council	1903	Thos. S. Shenton	220	50~, 3-ph.	210	200	..	£13,388	465 KW.	..	16=37½ H.P.	
365	RUGBY SCHOOL	Rugby School Electric Lighting Co., Ltd.	1896	A. E. Lee	100	100~, 1-ph.	85	64	..	£4,500	167 KW.	..	..	
366	RYDE & ST. HELENS	Isle of Wight Elec. Lt. & Pr. Co., & St. Helens El. Lg. Co.	1903	A. E. Mayes (Ast. H. Groome)	240 & 480	Direct, & 50~, 1-ph.	350	160	144 KW.	£82,204	560 KW.	96 mtl.	50=80 H.P.	
367	ST. ALBANS	North Metropolitan Electrical Power Distribution Co., Ltd.	1908	T. E. Eachus (res.)	230 & 460	Direct	..	123	..	£15,473	256 KW.	..	240 KW.	
368	ST. ANDREWS	Electric Supply Corporation, Ltd.	1905	K. A. Scott-Moncrieff*	225 & 450	Direct	300	88.8	80 KW.	£21,340	420 KW.	4 arc, 8 cbn.	50=138⅔ H.P.	
369	ST. ANNES-ON-SEA	St. Annes-on-Sea Urban District Council	1901	J. H. Clothier	240, tr. 500	Direct	750	327 lg. 330 tr.,	13 KW.	£48,794	1,316 KW.	44 arc, 32 cbn., 106 mtl., 169 N.	40=70 H.P.	80=
370	ST. AUSTELL	St. Austell & District Electric Lighting & Power Co., Ltd.	1886	T. Hill	110 & 220	Direct	120	62	46 KW.	£8,000	112 KW.	117 Nernst	11=60 H.P.	
371	ST. HELENS	St. Helens Corporation	1896	E.M. Hollingsworth	230 & 460 tr. 500	Direct	1,340	1,111	510 KW.	£150,000	1,864 KW.	161 Nernst	240=1,620 H.P.	Se
372	SALE	Sale Urban District Council	1903	C. J. Wood	230 & 460	Direct	100	75	80 KW.	£9,700	350 KW.	10 arc, 4 cbn., 190 mtl.	8=20 H.P.	
373	SALISBURY	Salisbury Electric Light & Supply Co., Ltd.	1898	A. B. Randall	210	Direct	600	332	134 KW.	£72,360	914 KW.	19 cbn., 14 mtl.	63=180 B.H.P.	
374	SALTBURN	Cleveland Trust, Ltd.	1899	C. W. Thompson	220	Direct	170	79	92 KW.	£14,000	352 KW.	..	12=60 H.P.	
375	SCARBOROUGH	Scarborough Electric Supply Co., Ltd.	1898	F. G. Holden	200 A.C. 500 D.C.	80~, 1-ph., & direct	1,945	872	175 KW.	£110,695	1,733 KW.	..	299 H.P.	44=
376	SHANKLIN & SANDOWN	Isle of Wight Electric Light & Power Co., Ltd.	1901	A. E. Mayes (Assist. L. Gillett)	240 & 480	Direct	425	218	40 KW.	£56,205	514 KW.	15 arc, 206 cbn.	40=40 H.P.	
377	SHEERNESS AND QUEENBOROUGH	Sheerness & District Elec. Power & Traction Co., Ltd.	1903	G. L. Kirk	220, 440 A.C. 230, 460 D.C.*	Direct, & 50~, 3-ph.	700	346	..	£50,426	332 KW.	226 mtl., 69 N. ..	372 H.P.	300
378	SHEFFIELD	Sheffield Corporation	1894	S. E. Fedden	200 A.C.	50~, 2-ph	10,900 (two stns.)	6,870	..	£970,000 (approx.)	7,807 KW.	65 arc	1,421=14,004 H.P.	
379	SHILDON	Northern Counties Electricity Supply Co., Ltd.	1905	T. Heron (Res.)*	230 & 460	Direct	120	80	..	..	198 KW.	47 KW.	30 KW.	
380	SHIPLEY	Shipley Urban District Council	1901	S. D. Schofield	230 & 460 tr. 500	Direct	1,170	822	750 A.	£65,341	516 KW.	42 arc, 3 inc.	89=680 H.P.	9
381	SHREWSBURY	Shrewsbury Corporation	1895	C. M. Johnston	210 & 420	Direct	780	383	..	£54,000	800 KW.	51 arc, 56 cbn., 529 mtl.	85=198 H.P.	
382	SLEAFORD	Sleaford Urban District Council	1902	W. Henry Wilson	220	Direct	180	70	18 KW.	£11,118	114 KW.	16 arc, 90 cbn., 40 mtl.	12=40 H.P.	
383	SLOUCH & DATCHET	Slough and Datchet Electric Supply Co., Ltd.	1903	A. E. Farrow	220 & 440	Direct	580	250	88 KW.	£44,886	348 KW.	103 mtl.	27	
384	SMETHWICK & OLDBURY	Birmingham & Midland Tramways Joint Committee	1904	S. A. Mahood	250 & 500 D.C. 400 AC*	Direct & 25~, 3-ph.,	6,500	3,000	7.5 KW.	..	300 KW.	..	4,020 H.P.	140=
385	SOUTHAMPTON	Southampton Corporation	1891	H. F. Street	200	Direct	2,200	1,470	1,500 KW.	£179,351	1,832 KW.	92 arc, 66 inc., 6 Nernst	40=200 H.P.	50=
386	SOUTHEND-ON-SEA	Southend Corporation	1902	Robert Birkett	230 & 460, tr. 500	Direct	2,050	1,438	50 KW.	£123,000 (approx.)	..	99 arc, 50 cbn., 41 mtl., 117 N.	60=340 H.P.	See
387	SOUTHPORT	Southport Corporation	1894	A. S. Black	100 & 210 A.C. 500 D.C.	50~, 1-ph., & direct	2,350	1,577	400 KW.	£200,803	3,543 KW.	75 arc, 150 inc.	90=609 H.P.	40=
388	SOUTH SHIELDS	South Shields Corporation	1896	J. H. Cawthra	110 & 220 tr. 550 D.C.	50~, 1-ph., & direct	2,700	1,776	517 KW.	£185,000	2,415 KW.	94 arc, 484×2 cbn.	480=2,500 H.P.	70=
389	SPENNYMOOR	Northern Counties Electricity Supply Co., Ltd.	1902	H. Puttick (Res.) C. W. Fairweather	230 & 460 D.C. 440 A.C.	Direct & A.C.	400*	187	..	..	405 KW.	21 KW.	157 KW. (inc. pr. & hg.)	
390	STAFFORD	Stafford Corporation	1896	H. Pooley	210 & 420	Direct	565	280	300 KW.	£32,500	..	8 arc	74=346 H.P.	
391	STALYBRIDGE	Stalybridge, Hyde, Mossley, & Dukinfield Tr. & El. Bd.	1904	Robert Blackmore	230 D.C., 400 A.C., tr. 500	40~, 3-ph., & direct	7,500	4,300	..	£250,000	500 KW.	..	230=6,000 H.P.	120=
392	STAMFORD	Urban Electric Supply Co., Ltd.	1902	J. E. Edmundson	240 & 480	Direct	380	232	600 A.H.	£51,190	526 KW.	5 arc, 10 cbn.	107=509 H.P.	
393	STIRLING	Stirling Corporation	1900	J. W. Papworth	230 & 460	Direct	638	274	30 KW.	£41,590	621 KW.	60 arc, 46 cbn., 214 mtl.	84=273 H.P.	
394	STOCKPORT	Stockport Corporation	1898	R. Lomax	230 & 460 tr. 500	Direct	2,050	1,440	200 KW.	£51,000	892 KW.	49 arc, 2 inc., 1 Nernst	73=428 H.P.	90=
395	STOCKTON-ON-TEES	Stockton-on-Tees Corporation	1900	J. J. Smith	230 & 460	Direct	1,050	590	75 KW.	£54,800 (approx.)	765 KW.	44 arc	121=830 KW.	
396	STOKE-ON-TRENT & FENTON	Stoke-on-Trent Corporation	1904	P. J. S. Tiddeman	240 & 480	Direct	800	545	50 KW.	£36,500	640 KW.	..	1,000 KW.	
397	STOWMARKET	Suffolk Electricity Supply Co., Ltd.	1896	Napier Prentice	100	Direct	78	42	50 KW.	..	100 KW.	..	25=40 H.P.	
398	STRATFORD-ON-AVON	Stratford-on-Avon Electricity Co., Ltd.	1907	Cecil D. Falcke	220 & 440	Direct	100	75.2	36 KW.	£10,538	172.5 KW.	..	18=138½ H.P. Htg. 15 KW.	
399	STRETFORD	Stretford Urban District Council	1903	R. Rowland	220 & 440, tr. 550	Direct	1,500	1,548	200 KW.	£84,500	750.7 KW.	99 arc, 133 mtl.	59=406.5 H.P.	See
400	SUNDERLAND	Sunderland Corporation	1895	A. S. Blackman	220 D.C.* 220 & 240 A.C.	Direct, & 50~, 3-ph.	9,593	4,425	431 KW.	£424,456	2,954 KW.	215 arc, 92 mtl.	1,002=7,548 KW.	144=
401	SURBITON	Surbiton Urban District Council*	1903	T. M. Colson	240 & 480	Direct	380	215	90 KW.	£59,046	999 KW.	2 Nernst	22=45½ H.P.	
402	SUTTON, CARSHALTON WALLINGTN & CHEAM	South Metropolitan Electric Tramways & Lighting Co.	1902	A. V. Mason	200 A.C., tr. 500 D.C.	50~, 1-ph., & direct	1,500	577	..	£80,588	964 KW.	2 arc, 476 mtl., 2 Nernst	26=143.25 H.P.	2
403	SUTTON COLDFIELD	Sutton Coldfield Corporation	1901	T. Duesbury	230 & 460	Direct	625	263	90 KW.	£42,596	813 KW.	14 arc, 209 mtl.	30=128 KW.	
404	SWANSEA	Swansea Corporation	1901	C. A. L. Prusmann	220 & 440 tr. 550	Direct and 50~, 1-ph.	2,325	1,367	78 KW.	£153,240	2,274 KW.	74 arc, 80 mtl.	1,748 H.P.	
405	SWINDON	Swindon Corporation	1903	A. Dimmack	220 & 440 tr. 550	Direct	900	639	44 KW.	£57,381	975 KW.	21 arc, 341 mtl.	362 H.P.	24=
406	SWINTON & PENDLEBURY	Swinton & Pendlebury Urban District Council	1907	H. C. Busbridge (Res.)*	250 & 500	Direct	150	60	..	£11,400	146 KW.	2 arc, 16 mtl.	18=78.5 H.P.	
407	TAUNTON	Taunton Corporation	1888*	E. B. Thornhill	105 & 210 tr. 560 D.C.	60~, 1-ph., & direct	1,100	570	..	£70,111	930 KW.	72 arc, 44 cbn., 230 mtl.	104=320 H.P.	12=
408	THIRSK AND SOWERBY	Northern Counties Electricity Supply Co., Ltd.	1903	J. A. Carr (Res.)*	230 & 460	Direct	95	63	..	..	119 KW.	13 KW.	2 KW.	
409	TODMORDEN	Todmorden Corporation	1905	Henry Talbot	230	Direct	225	103	13.8 KW.	£20,000	188 KW.	..	31=55 KW.	
410	TONBRIDGE	Tonbridge Urban District Council	1902	M. P. Plunkett	220 & 440	Direct	270	157	150 KW.	£25,500 (estd.)	288 KW.	18 arc, 87 mtl.	21=80 H.P.	
411	TONYREFAIL AND GILFACH GOCH	Tonyrefail & Gilfach Goch El. Light & Power Co., Ltd.	1904	Arthur J. Arthur	220	50~, 1-ph.	75	70	..	£5,000	73 KW.	204 inc.	..	
412	TOPSHAM	Topsham Electricity Supply Co., Ltd.	1905	H. C. Gould	100	Direct	22	18.5	14 KW.	£2,328	97 KW.	73 mtl.	9=35 H.P.	
413	TORQUAY	Torquay Corporation	1898	S. W. Salt	200	50~, 1-ph.	625	318	..	£46,940	763 KW.	53 arc, 307 inc., 150 Nernst	6=15 H.P.	
414	TOTNES	Electric Supply Corporation Ltd.	1904	K. A. Scott-Moncrieff*	225 & 450	Direct	66	30	35 KW.	£18,400	111 KW.	..	6=12½ H.P.	
415	TOTTENHAM	North Metropolitan Electric Power Supply Co.	1908	J. Wilson (Res.)	415 & 240	50~, 3-ph.	750 (sub-stn.)	375	..	£35,000	429 KW.	125 arc	88=541.3 H.P.	
416	TRAFFORD PARK & SALE	Trafford Power & Light Supply (1902) Ltd.	1899	T. A. Kerr	250 & 500 D.C. 6,500 A.C.	Direct & 50~, 3-ph.	4,100	2,548	..	..	..	..	..	
417	TREETON	Treeton Parish Council	1907	W. H. Barwell	1,250	Direct	18	..	..	..	..	25 flame arcs	..	
418	TUNBRIDGE WELLS	Tunbridge Wells Corporation	1895	J. W. Beauchamp (Res.)*	220	67.5~, 1-ph.	2,080	642	..	£84,363	2,200 KW.	79 arc, 160 cbn., 412 mtl.	100 H.P.	
419	TWICKENHAM, HAMPTON & TEDDINGTON*	Twickenham & Teddington Electric Supply Co., Ltd.	1902	M. Farrer	240 & 480	Direct	810	679	250 KW.	£233,167	2,491 KW.	..	75=384 H.P.	
420	TYNEMOUTH	Tynemouth Corporation	1901	C. Turnbull	220 & 440 tr. 550	Direct	1,070*	1,040	110 KW.	£90,404	1,107.4 KW.	24 arc, 8 cbn., 35 mtl., 89 N.	119=1,498 H.P.	27 ca
421	UXBRIDGE AND DIST.	Uxbridge & District Electric Supply Co., Ltd.	1902	A. Randall Bell	230	50~, 1-ph.	1,040	288	..	£82,500	535 KW.	1 arc, 54 mtl.	65=626 KW.	
422	VENTNOR, BONCHURCH AND ST. LAWRENCE	Isle of Wight Electric Light and Power Co., Ltd.	1899	A. E. Mayes (Man.) (Asst.) C. Grut	210	Direct	335	200	100 KW.	£56,610	550 KW.	117 cbn., 2 mtl., 35 Nernst	35=70 H.P.	
423	WAKEFIELD	Wakefield Corporation	1898	H. A. Nevill	200	60~, 3-ph.	1,450	927	..	£83,581	..	64 arc, 93 mtl.	163=1,264 H.P.	
424	WALLASEY	Wallasey Urban District Council	1897	J. A. Crowther	100 & 200 A.C. 500 D.C.	50~, 1-ph., & direct	2,550	1,223	..	£93,561	1,945 KW.	60 arc, 120 inc.	51=294 H.P.	See o
425	WALSALL	Walsall Corporation	1895	A. S. Barnard	105 & 210 tr. 500	Direct	1,730	1,026	..	£111,988	1,463 KW.	19 arc, 10 mtl., 12 N.	158=760 H.P.	36cars
426	WALTHAMSTOW	Walthamstow Urban District Council	1901	G. R. Spurr	230 & 460	Direct	1,900	726	250 KW.	£132,000	1324.6 KW.	89 arc, 460 inc., 8 Nernst	390 H.P.	See o
427	WALTON-ON-NAZE	Coast Development Corporation	1903	E. A. Lambert	230	Direct	100	90	65 KW.	..	145 KW.	1 arc, 105 mtl.	2=6 H.P.	1=1
428	WARRINGTON	Warrington Corporation	1900	F. V. L. Mathias	230, 460 D.C. 220, 380 A.C.*	Direct, & 50~, 3-ph.*	2,150	1,025	800 A.H.	£98,769	3,184 KW. (inc. mtrs.)	34 arc, 53 mtl.	..	42=7
429	WATFORD	Watford Urban District Council	1899	F. W. Purse	200	50~, 1-ph.	1,130	577	56 KW. for 2 h.	£88,520	1,405 KW.	18 arc, 2170 cn.,* 100 mtl. (apprx)	110=420 H.P.	
	[illegible]	[illegible] Corporation	1904	W. Fennell	230 & 460	Direct	520	180	75 KW. for 8 h.	£20,000 (approx.)	341 KW.	..	426 KW.	

..	260=1,731 H.P.	..	4,021 KW.	9	Lg. 6 to 3 (shops 4½ to 3); pr. 1½	cont. w. r. sw. Sliding scale ..	1,247,927	Data to Dec. 31, 1908	353
nc. ..	23=163 H.P.	..	1,004 KW.	..	Lg. 4½ & 4; pb. lg. inc. £3 p.a.; pr. 2-1½, 1½ & 1; htg. 1½	Flat rate, 2-rate meter, sl. sc. for pr.	..	Part gas power..	354
tl. ..	26=66½ H.P.	..	760 KW.	..	Lg. 7½ & 4½, or 6; pb. lg. inc. £3 p.a.; pr. 2	Max. demand & flat rate	283,414	.. ..	355
re, 8 inc.	19=20 H.P.	..	480 KW.	..	Lg. 6 & 3, or 5; pb. lg. 4; pr. 4 & 2	Max. demand & flat rate	..	.. ..	356
..	118=819 KW.	..	2,600 KW.	8	Lg. 5½; pr. 2½; htg. 1½	Flat rate with discounts	715,365	Data to Dec. 31, 1909	357
..	260=1,578 H.P.	120=4,260 H.P.	8,131 KW.	82·3	Lg. 6 & 2, or 4½ with dis.; pr. 2 to 7; tr. 1½ to 1	Max. dem., fl. r., sl. sc., con. w. dis., & sp.	3,545,339	Lighting and traction. *Also 3-phase 50~ at 3,000 volts. Data to Mar. 31, 1910	358
l. ..	5=10 H.P. ..	..	110 KW.	3.6	Lg. 7; pb. lg. 3½; pr. 3	Flat rate	23,710	Data to Dec. 31, 1909	359
..	110=959 H.P.	74=1,970 H.P.	3,190 KW.	13.2	Lg. 4; pr. 1½ & 1; tr. 1½ ..	Max. dem., flat rate w. dis., & sl. scale	1,978,012	Lighting and traction. Discounts to large power cons. up to 40%. *Available for both lg. & tr. Data to Mar. 31, '10	360
e, 34 inc.	.. ..	.. ..	.. ..	..	.. ..	..	..	.. ..	361
c. ..	1 H.P. ..	..	35 KW. ..	..	Lg. 7	Flat rate	..	.. ..	362
ernst ..	10 H.P. ..	..	354 KW. ..	30	Lg. 6; pb. lg. 4; pr. 2	Flat rate	48,876	Gas power. Data to April 22, 1910	363
..	16=37¾ H.P.	..	498 KW. ..	15	Lg. 5 less 5%; pr. 2½ & 3 ..	Flat rate with discounts	160,876	Supply from the B.T.-H. Co.'s works at 2,200 volts. Data to Mar. 31, 1909	364
..	.. ..	..	167 KW. ..	..	Lg. 4 & 5	Flat rate	38,282	Gas power. Data to Dec. 31, 1909	365
tl. ..	50=80 H.P. ..	..	655 KW. ..	8	Lg. 7 & 4, or 6; pr. 4 & 1½, or 2½	Max. demand & flat rate	162,568	Gas power. Data to Dec., 1908	366
..	240 KW. ..	..	466 KW.	105.4	Lg. 7 & 2½, or 5; pr. 2½ & special	Max. demand & flat rate	100,848	E. T. R. Murray, eng.-in-chief. Bulk supply from N.M.E.P.S. Co. Data to Dec. 31, 1909	367
e, 8 cbn.	50=133¾ H.P.	..	555 KW.	24	Lg. 5; pb. lg. 3 to 1½; pr. 3; hg. 1½	Flat rate	121,478	*Res'dent eng. H. Dixon. Data to Dec. 31, 1909.. ..	368
e, 33 cbn., tl., 169 N.	40=70 H.P.	80=2,000 H.P.*	2,888 KW.	7.6	Lg. 6 & 2, or 4½; pb. lg. & pr. 2½ to 1½; tr. 1½ to 1½	Max. demand & flat rate with dis.	802,734	Lighting & traction. *Energy sold to Tramway Co., 200 KW. max. demand. Data to Mar. 31, 1910	369
Nernst..	11=60 H.P.	..	151 KW.	..	Lg. 5; pb. lg. contract; pr. 2 ..	Flat rate & contract	90,000	Suction gas plant substituted for steam, 1904. Data to June 1, 1909	
Nernst	240=1,623 H.P.	See other Table	2,984 KW.	8.16	Lg. 4½ & 3½: pb. lg. 0.77; pr. 2 & 1 w. dis.; tr. 1.11 & 0.37	Lg. flat r., pr. max. dem. w. dis., tr. scale	2,484,681	Lighting and traction. Data to Mar. 31, 1909	371
e, 4 cbn., 0 mtl.	8=20 H.P. ..	..	364 KW.	4.6	Lg. 5½ & 3, or 5; pb. lg. 2; pr. 3 & 1½, or 2 with lg.	Max. demand & flat rate	91,000	No meter rents charged. Data to Mar. 31, 1910 ..	372
cbn., 14 mtl.	68=180 B.H.P.	..	1,074 KW.	1	Lg. 7, 4 & 2; pr. 4 & 1, or 2½ ..	Max. demand, and flat rate for pr.	524,043	Part water power Data to Dec. 31, 1909	373
..	12=60 H.P. ..	..	397 KW.	25	Lg. 6 to 4; pr. 2½ to 1½ ..	Sliding scale w. dis.	64,941	Part gas power. Data to Sept. 30, 1909	374
..	299 H.P. ..	44=1,540 H.P.	3,517 KW.	3	Lg. 6 to 3; pr. 2; htg. 1; tr. 1.3	Sliding scale with discounts	846,022	Lighting and traction. Data to Dec. 31, 1909	375
206 cbn. tl., 69 N.	40=40 H.P.	..	640 KW.	5	Lg. 7 & 4, or 6; pr. 4 & 1½, or 2½	Max. demand & flat rate	227,868	Data to Dec. 1908	376
..	372 H.P.	300 H.P. ..	876 KW. ..	23	Lg. 4½ & 2½; pr. 2 & 1	Max. demand, flat rate & special	468,264	Lighting and traction. *Tr. 500 v. D.C. Data to Dec. 31, 1908	377
c ..	1,421=14,004 H.P.	..	22,488 KW.	13.43	Lg. 4 w. dis.; pb. lg. various rates; pr. 2 to 0.8; htg. 1	Flat rate with dis., & sl. scale for pr.	10,500,000 (approx.)	Two A.C. stns.: Neepsend 7,000 KW. turbines; Sheaf St. 3,900 KW. various types. Data to Mar. 25, 1910	378
w. ..	30 KW. ..	..	275 KW.	..	Lg. 4; pr. 2½ to 1½	Flat rate & sliding scale	..	*C.W. Fairweather (Mgr.). Cons. engrs. Merz & McLellan. Data to Dec. 31, 1909	379
e, 3 inc.	89=680 H.P.	948* KW.	1,083 KW.	..	Lg. 4½ & 2; pb. lg. 1½; pr. 2 & 1, or 1½; tr. 1½	Max. demand & flat rate	886,758	Lighting and traction. *Tramway max. demand ..	380
, 56 cbn., 0 mtl.	85=198 H.P.	..	999 KW.	4.8	Lg. 6, 4 & 2, or 5; pb. lg. about 2½*; rr. 3, 2 & 1½, w. dis. to 10%	Lg. max. dem. & flat; pr. sl. scale w. dis.	531,527	*Pb. lg. are £20 p.a., inc. £1 14s., £3, £4 and £5 p.a. Data to March 31, 1910	381
90 cbn., tl.	12=40 H.P. ..	..	155 KW.	3	Lg. 5; pb. lg. arc £12½, glow £2 p.a.; pr. 3	Flat rate	71,492	Data to Mar. 31, 1910	382
atl. ..	27	..	447 KW.	17.1	Lg. 4, 4½, 6; pb. lg. 3; pr. 3 ..	Flat rate with discount	250,248	Bulk supply to Windsor E. I. Co. at 3.94d. per unit. Data to Mar. 1908	383
..	4,020 H.P. ..	140=1,620 H.P.	4,530 KW.	..	Lg. 7 & 2½, or 4½; pr. 1½; tr. 1	Max. demand & flat rate	7,066,273	Lg. & tr. Tram. Cmee. holds E.L. prov. order for Smethwick & Oldbury. *Tr. 500 v. D.C. Data to March, 1910	384
, 66 inc., Nernst	40=200 H.P.	50=1,250 H.P.	2,965 KW.	..	Lg. 4½; pb. lg. 2½; pr. 3 & 2; tr. 2½	Flat rate	..	Lighting and traction	385
50 cbn., l., 117 N.	60=340 H.P.	See other Table	3,193 KW. (ex. tr.)	12	Lg. 6 & 3, or 4½*; pb. lg. are £13 14s. N. £2 7s. 4d.; pr. 1 & 6 or 2; tr. 1½	Max. demand, flat, 2 rate & Hopkinson	1,793,000 (estd.)	Lighting and traction. *Also £3 10s. per KW., and 1½d. p.u. Data to Mar. 31, 1909	386
150 inc.	90=609 H.P.	40=1,620 H.P.	5,272 KW.	..	Lg. 6, 4, & 2, or 4½; pb. lg. are £20 p.a.; pr. 2 & 1½; tr. 1½ to 1½	Max. demand & flat rate	2,174,722	Lighting and traction. Data to Mar., 1909	387
e, 481×2 cbn. w. ..	80=2,500 H.P.	70=2,100 H.P.	5,498 KW.	12.8	Lg. 7 & 1½, or 4; pb. lg. arc £2 2½*; pr. 1½ to 1; htg. 2; tr. 1.5 to 1.3	Max. dem., flat, & sl. scale w. dis.	3,300,000	Lighting & traction. *Also pb. lg. two 16-c.p. inc., £2 12s. per annum. Data to Feb. 1910	388
..	157 KW. (inc. pr. & hg.)	..	583 KW.	..	Lg. 4; pr. 1½ with discount	..	..	*Used as stand-by; bulk from Cd. & Dm. E. P. S. Co. Cons. engrs. Merz & McLellan. Data to Dec. 31, 1909	389
..	74=346 H.P.	..	765 KW.	..	Lg. 4 to 5; pr. 2½ to 1½	Flat rate w. dis. ..	890,010	Data to March 31, 1910	390
..	250=6,000 H.P.	120=3,600 H.P.	6,000 KW.	..	Lg. 3½, less 10 %, or 4 & 2; pr. 2½ to ¾; tr. 1	Max. dem., flat, sl. sc., cont. w. dis., & 2-r.	12,000,000	Lighting & traction. Data to May 1, 1910	391
10 cbn.	107=509 H.P.	..	977 KW. ..	..	Lg. 7 & 3, or 5; pb. lg. £70 p.a.; pr. 4 & 1, or 2½, & special	Max. dem., flat, 2-rate, con., t. sw., & sp.	298,200	Wiring and motors on hire purchase 3, 5, or 7 years. Data to Dec. 31, 1909	392
46 cbn., 4 mtl.	84=273 H.P.	..	868 KW.	19	Lg. 7 & 2, or 6 to 4½; pb. lg. 3.6; pr. 5 & 1, or 4 to 1½	Max. demand and sliding scale	380,414	Data to May 15, 1910	393
c. 2 inc., Nernst e ..	73=428 H.P.	90=3,150 H.P.	4,472 KW.	..	Lg. 4; pb. lg. arc £11¼ p.a.; pr. 1½*; tr. 1¼	Flat rate	1,319,000	Lighting & traction. *Special rates to large consumers	394
..	121=830 KW.	..	1,406 KW.	2	Lg. 6 & 2, or 4; pb. lg. 2.83; pr. 2 to 1½	Max. demand, flat & 2-rate (t.s.) w. dis.	838,598	Data to Mar. 31, 1910	395
..	1,000 KW. ..	..	1,640 KW.	30	Lg. 7 & 2; pr. 1½ to 0·8.. ..	Max. dem., flat, sl. sc. & cont. w. dis.	900,000	Data to Mar. 31, 1910	396
..	25=40 H.P.	..	129 KW.	..	Lg. 8 & 6; pr. 6 to 3	Flat rate	..	Gas power	397
..	18=138½ H.P. Htg. 15 KW.	..	290.5 KW.	29	Lg. 5; pr. 2½, 2, 1½; htg. 1½ ..	Flat rate	76,747	Greater portion of lighting done with metallic filament lamps. Data to Dec. 31, 1909	398
rc, 133 tl.	59=406.5 H.P.	See other Table	1,055 KW. (ex. tr.)	27.8	Lg. 4½, or £7 per KW. p.a. & 1½ p.u.*; pr. 3 to 1†; tr. 1.131	Flat rate, sl. sc. & Hopkinson	2,035,951	Lg. and tr. *Pb. lg. arc £20 (½ nt. £12), inc. £2½, p.a. †Or £1 per B.H.P. per qr. & ½d. p.u. Data to Mar. 31, 1910	399
, 92 mtl.	1,002=7,548 KW.	144=3,704 H.P.	13,400 KW.	4.65	Lg. 4½ w. dis. to 2½, or 4½ & 2½†; pr. 2½ to ⅞, or 2½ & 1½; tr. 1½	Max. dem., flat w. dis., t.sw., cont. & spl.	7,848,815	Lg. & tr., 2 stns *Tr. 550 v. †Pb. lg. arc £14 3. 8. Inc. due to improved shipyard wkg. Data to Mar. 31, 1910	400
nst ..	22=45½ H.P.	..	1,082 KW.	1.6	Lg. 7 & 3, or 6; pb. lg. £3½ per lp. p.a.; pr. 4 & 1½, or 2½	Max. demand and flat rate	254,191	*Worked by Callender's Cable and Construction Co., Ltd. Data to Mar. 31, 1909	401
476 mtl., ernst	26=143.25 H.P.	250 KW.	1,687.74 KW.	16.2	Lg. 5½; pb. lg. arc £17½ (½ nt.), inc. & Nernst £3½ p.a.; pr. 2½	Flat rate	482,890	Data to Dec. 31, 1909	402
rc, 209 tl.	30=123 KW.	..	1,041 KW.	8.4	Lg. 5½ to 4; pb. lg. 1.25; pr. 2 & 1½	Sliding scale ..	368,039	Data to Mar. 31, 1910	403
arc, 80 tl.	1,748 H.P. ..	..	3,845 KW.	16.7	Lg. 6 & 2, or 4½; pb. lg. arc £25 & £11 p.a.; pr. 2 & 1½; tr. 1½ to 1	Max. demand and flat rate	2,400,337	Lighting and traction. Arc lighting being extended. Data to Mar., 1909	404
re, 341 tl.	362 H.P. ..	24=858 H.P.	.. ..	..	Lg. 4, or £6 per KW. & 2 p.u; pb. lg. 2.95* av.; pr. 2 w. dis.; tr. 1·6	Max. dem., flat rate and special	849,493	Lighting & traction station. *Including maintenance Data to Mar. 31, 1910	405
16 mtl.	18=73.5 H.P.	..	216 KW.	40	Lg. 4, or 1s. per 30-w. lp. & 1½d. p.u.; pb. lg. 2½; pr. 1½ and 1	Flat rate†	66,773	*Lancs. Elec. Pr. Co. manage undertaking. †Alternative fixed charge per lp. & 1½d. p.u. Data to Mar. 31, 1910	406
44 cbn., mtl.	104=320 H.P.	12=240 H.P.	1,631 KW.	6	Lg. 6 to 3 (outside arcs 2); pr. 2; tr. 1.2	Max. demand and flat rate	632,582	Lighting and traction. *Purchased from Co. in 1893. Data to Mar. 31, 1909	407
r. ..	2 KW. ..	..	134 KW.	..	Lg. 4½; pr. 2½ & 1½	Flat rate & sliding scale	..	*C.W. Fairweather (Mgr.). Cons. engrs. Merz & McLellan. Data to Dec. 31, 1909	408
.	31=55 KW.	..	243 KW.	27.6	Lg. 4½, or 6 & 2; pr. 2	Max. demand & flat rate	89,097	Data to Mar. 31, 1908	409
87 mtl.	21=80 H.P.	..	379 KW.	8	Lg. 6 (outside 3); pb. lg. arc £18, inc. £3½; pr. 3, 2½, 1; htg. 2	Max. demand and flat rate	192,000 (estd.)	Data to Mar. 31, 1910	410
. ..	.. ..	..	..	..	Lg. 6; pb. lg. £2 4/0 per lamp per annum	Flat rate and contract	..	Evanstown supplied for Ogmore C.; 43 street lps. & pte. supply. Lg. of Thomas Town & Coed Ely in hand.	411
. ..	9=23 H.P. ..	..	..	16	Lg. 5; pr. 3½	Flat rate and contract	21,418	.. ..	412
07 inc., Nernst	6=15 H.P. ..	..	831.5 KW.	..	Lg. 7 & 3; pb. lg. arc £20, inc. £2½ p.a.; pr. 2½	Max. demand and flat rate	..	.. ..	413
.	6=12½ H.P.	..	124 KW. ..	28.5	Lg. 4½; pr. 3; hg. 1½	Flat rate	30,359	*Resident eng., F. Howlett. Data to Dec. 31, 1909 ..	414
e ..	88=541.3 H.P.	..	958 KW.	220	Lg. 6 & 2, or 5; pb. lg. £16 per lp. p.a.; pr. 4 & 1, or 3 & 1, or 1½ t sw.	Max. demand, flat rate & time switch	530,226	Eng.-in-chief, E. T. R. Murray. Data to Dec. 31, 1909	415
.	.. ..	..	..	..	Lg. 4 & 1½; pr. 1½ & ⅓	Max. demand ..	3,758,040	Bulk supply to Sale U.D.C. Data to Mar. 31, 1910 ..	416
ne arcs	.. ..	..	..	..	.. ..	..	..	Electricity supplied by Rother Vale Collieries, Ltd. Data to April 13, 1910	417
e, 160 12 mtl.	100 H.P. ..	..	2,339 KW.	..	Lg. 6 & 3, or 4½; pb. lg. 1.93; pr. 2½ to 1½	Max. dem., fl. rate, sl. scale & 2-rate m	887,888	*H. Boot, Cons. Engr. Data to Mar. 31, 1909	418
.	75=384 H.P.	..	3,098 KW.	10	Lg. 7 & 3, or 5½ w. free lamps; pr. 4 & 1½, or 2½	Max. demand, flat rate & 2-rate meter	672,054	*Also S. Margaret's o/T., Hampton Wick, Hampton Ct. and E. Molesey Data to Dec. 31, 1909	419
8 cbn., , 89 N.	119=1,498 H.P.	27 cars ..	2,483 KW. (ex. tr.)	14.8	Lg. 5 & 2, or 4½†; pr. 2½ & 1½, or 1½ & spl.; tr. 1½ to 1(T side, 1½)	Max. demand and flat rate	1,454,093	Lg. & tr. *Bulk supply, 1,000 KW., from Carville. †Pb. lg., arc £16 & £18; N. £3, p.a. Data to Mar. 25, 1908	420
54 mtl.	65=626 KW.	..	1,161 KW.	..	Lg. 7 (rural), 5 (urban); pb. lg. £2/5/6 per lp. p.a.; pr. 3 & ½, or 2½	Max. demand, flat rate and contract	382,981	Data to Dec. 31, 1909	421
, 2 mtl., ernst 93 mtl.	35=70 H.P.	..	695 KW.	2	Lg. 7 & 4, or 6; pr. 4 & 1½, or 2½	Max. demand, flat rate & contract	235,416	Data to Dec., 1908	422
.	163=1,264 H.P.	..	2,455 KW.	..	Lg. 4 (ch. 3) pb. lg. arc £13½, inc. £2 p.a.; pr. 1½ to 1 (hoists, 2)*	Flat rate	1,082,057	*Electricity for domestic purposes, 1d. p.u. Data to Mar. 31, 1909	423
120 inc.	51=294 H.P.	See other Table	2,190 KW.	11.1	Lg. 4 to 3; pb. lg. arc £20 p.a.; pr. 2; tr. 1½	Sliding scale and flat rate	1,949,196	Lighting and traction	424
10 mtl., N.	158=760 H.P.	36 cars=576 KW	2,619 KW.	9	Lg. 6 & 2, or 4; pb. lg. £488 p.a.; pr. 2 to 1½; tr. 1½	Max. dem. & flat rate w. dis.	1,690,753	Lighting and traction. Data to Dec. 31, 1909	425
60 inc., nst 05 mtl.	390 H.P. ..	See other Table	1,743 KW. (ex. tr.)	..	Lg. 4 w. dis.; pb. lg. 3 & 2; pr. 1½ to 2½	Flat rate	..	Lighting and traction. Gas power..	426
58 mtl.	2=6 H.P. ..	1=15 H.P.	165 KW. ..	5	Lg. 6; pb. lg. arc £12, mtl. £2/12/6 p.a.	Flat rate	64,950	Lighting and traction. Data to Mar. 25, 1910	427
70cn.,* (apprx)	110=420 H.P.	42=798 H.P.	3,866 KW.	..	Lg. 6 & 2, or 4 (ch. 3½); pb. lg. £620 p.a.; pr. 2 & 1; tr. 1½. No mtr. rent	Max. dem., flat w. dis., pr. sl. scale†	2,771,961	Lighting and traction. *220 volts 1-ph., 380 v. 3-ph.; tr. 500 v. D.C. †Also special terms. Data to Mar. 31, 1910	428
.	426 KW. ..	..	767 KW.	85	Lg. 7 & 3, or 5; pb. lg. 5; pr. 3 to 1	Max. dem., flat, sl. scale & 2-rate w.t.sw.	958,000 (estd.)	*Total equivalent 32-watt lamps. Data to Mar. 31, 1909	429
					Lg. 6 & 1½, or 4 (½d. discount); pr. 1½ to 3	Max. demand, flat	223,708	System changed over during year from bulk supplies to	430

		Supply Co., Ltd.		J. A. Carr (Engr.)	220 & 440	Direct ..	95	69	..	..	119 KW.	250 mtl. 18 KW. ..	2 KW. ..	
409	TODMORDEN	Todmorden Corporation ..	1905	Henry Talbot ..	230	Direct ..	225	103	13.8 KW.	£20,000	188 KW.	..	31=55 KW.	
410	TONBRIDGE	Tonbridge Urban District Council	1902	M. P. Plunkett	220 & 440	Direct ..	270	157	150 KW.	£25,500 (estd.)	288 KW.	18 arc, 87 mtl.	23=80 H.P.	
411	TONYREFAIL AND CILFACH COCH	Tonyrefail & Gilfach Goch El. Light & Power Co., Ltd.	1904	Arthur J. Arthur	220	50~, 1-ph.	75	70	..	£5,000	73 KW.	204 inc. ..	..	
412	TOPSHAM	Topsham Electricity Supply Co., Ltd.	1905	H. C. Gould ..	100	Direct ..	22	18.5	14 KW.	£2,328	97 KW.	78 mtl. ..	9=33 H.P. ..	
413	TORQUAY	Torquay Corporation.. ..	1898	S. W. Salt ..	200	50~, 1-ph.	625	318	..	£46,940	763 KW.	53 arc, 307 inc., 150 Nernst	6=15 H.P. ..	
414	TOTNES	Electric Supply Corporation Ltd.	1904	K. A. Scott-Moncrieff*	225 & 450	Direct ..	66	30	35 KW.	£13,400	111 KW.	..	6=12½ H.P.	
415	TOTTENHAM	North Metropolitan Electric Power Supply Co.	1908	J. Wilson (Res.)	415 & 240	50~, 3-ph.	750 (sub-stn.)	375	..	£35,000	429 KW.	125 arc ..	88=541.3 H.P.	
416	TRAFFORD PARK & SALE	Trafford Power & Light Supply (1902) Ltd.	1899	T. A. Kerr ..	250 & 500 D.C. 6,500 A.C.	Direct & 50~, 3-ph.	4,100	2,548	..	..	..	..	..	
417	TREETON	Treeton Parish Council ..	1897	W. H. Barwell..	1,250	Direct ..	13	..	..	..	..	25 flame arcs	..	
418	TUNBRIDGE WELLS ..	Tunbridge Wells Corporation	1895	J. W. Beauchamp (Res.)*	220	67.5~, 1-ph.	2,080	642	..	£84,868	2,200 KW.	79 arc, 160 cbn., 412 mtl.	100 H.P. ..	
419	TWICKENHAM, HAMPTON & TEDDINGTON*	Twickenham & Teddington Electric Supply Co., Ltd.	1902	M. Farrer ..	240 & 480	Direct ..	810	679	250 KW.	£233,167	2,491 KW.	..	75=384 H.P.	
420	TYNEMOUTH	Tynemouth Corporation ..	1901	C. Turnbull	220 & 440 tr. 550	Direct ..	1,070*	1,040	110 KW.	£90,404	1,107.4 KW.	24 arc, 8 cbn., 35 mtl., 89 N.	119=1,493 H.P.	27 ca
421	UXBRIDGE AND DIST.	Uxbridge & District Electric Supply Co., Ltd.	1902	A. Randall Bell	230	50~, 1-ph.	1,040	288	..	£82,500	535 KW.	1 arc, 54 mtl.	65=626 KW.	
422	VENTNOR, BONCHURCH AND ST. LAWRENCE	Isle of Wight Electric Light and Power Co., Ltd.	1899	A. E. Mayes (Man.) (Asst.) C. Grut	210	Direct ..	335	200	100 KW.	£56,610	550 KW.	117 cbn., 2 mtl., 35 Nernst	35=70 H.P.	
423	WAKEFIELD	Wakefield Corporation ..	1898	H. A. Nevill ..	200	60~, 2-ph.	1,450	927	..	£83,581	..	64 arc, 93 mtl.	163=1,264 H.P.	
424	WALLASEY	Wallasey Urban District Council	1897	J. A. Crowther..	100 & 200 A.C. 500 D.C.	50~, 1-ph., & direct	2,550	1,223	..	£93,561	1,945 KW.	60 arc, 120 inc.	51=294 H.P.	See
425	WALSALL	Walsall Corporation	1895	A. S. Barnard ..	105 & 210 tr. 500	Direct ..	1,730	1,026	..	£111,938	1,463 KW.	19 arc, 10 mtl., 12 N.	158=760 H.P.	36car
426	WALTHAMSTOW ..	Walthamstow Urban District Council	1901	G. R. Spurr ..	230 & 460	Direct ..	1,900	726	250 KW.	£132,000	1324.6 KW.	89 arc, 460 inc., 8 Nernst	390 H.P. ..	See
427	WALTON-ON-NAZE ..	Coast Development Corporation	1903	E. A. Lambert ..	230	Direct ..	100	90	65 KW.	..	145 KW.	1 arc, 105 mtl.	2=6 H.P. ..	1=
428	WARRINGTON	Warrington Corporation ..	1900	F. V. L. Mathias	230, 480 D.C. 220, 380 A.C.*	Direct, & 50~, 3-ph.*	2,150	1,625	800 A.H.	£98,769	3,184 KW. (inc. mtrs.)	34 arc, 53 mtl.	..	42=
429	WATFORD	Watford Urban District Council	1899	F. W. Purse ..	200	50~, 1-ph.	1,130	577	56 KW. for 2 h.	£88,520	1,405 KW.	18arc, 2170cn.,* 100mtl. (apprx)	110=420 H.P.	
430	WEDNESBURY	Wednesbury Corporation ..	1904	W. Fennell	230 & 460	Direct ..	520	180	75 KW. for 3 h.	£20,000 (approx.)	341 KW.	..	426 KW. ..	
431	WELLINGBOROUGH ..	County of Northampton El. Power & Traction Co., Ltd.	1908	Wm. J. S. Jones	230 & 460	Direct ..	300	175	70 KW.	..	168 KW.	261 inc., 6 Nernst	21=150 H.P.	
432	WEST BROMWICH ..	West Bromwich Corporation	1901	W. A. Jackson..	230 & 460 tr. 500	Direct ..	1,550	1,100	175 KW.	£74,919 (approx.)	658 KW.	81 arc, 160 mtl.	162=1,850 H.P.	30=
433	WEST HAM	West Ham Corporation ..	1899	H. Herbert Couzens	100 to 500 D.C.*	50~, 1 & 2-ph., & direct	11,400	6,359	400 KW.	£435,000 (approx.)	3,906 KW.	362arc, 233mtl.	999=7,762 KW.	3,736
434	WEST HARTLEPOOL ..	West Hartlepool Corporation	1901	H. F. Friederichs	230 & 460	Direct ..	1,500	1,070	69 KW.	£96,844	1,819 KW.	89 arc, 26 mtl.	223=1,957 H.P.	
435	WESTON-SUPER-MARE	Weston-super-Mare & District Electric Supply Co., Ltd.	1901	G. Charlton ..	230 & 460	Direct ..	1,100	442	100 KW.	..	700 KW.	..	23=182 H.P.	24=
436	WEYBRIDGE AND WALTON-ON-THAMES	Urban Electric Supply Co., Ltd.	1902	Herbert W. Watts	240 & 480	Direct ..	580	459	45 KW.* 175 KW.†	£123,251	1,605 KW.	50 N., 4 mtl.	52=110 H.P.	
437	WEYMOUTH & MELCOMBE REGIS	Weymouth Corporation ..	1904	Jos. H. Bolam ..	230 & 460	Direct ..	694	353	130 KW.	£52,031	779 KW.	48 arc, 22 N., 586 m'l.*	52=133 KW. (Htz. 53 KW.)	
438	WHITBY	Whitby Urban District Council	1902	L. H. King ..	230 & 460	Direct ..	400	191	23 KW.	£38,400	371 KW.	31 arc, 100cbn., 260 mtl.	339 H.P.	
439	WHITCHURCH AND PANGBOURNE	Whitchurch and Pangbourne Electric Supply Co., Ltd.	1903	D. H. Coombs ..	240 & 480	Direct ..	108	32	30 KW.	£6,250	90 KW.	..	1=6½ H.P.	
440	WHITEHAVEN	Whitehaven Corporation ..	1893	B. Sankey ..	210, 420, & 440	Direct ..	386	245	105 KW.	£43,437	500 KW. (approx)	500 inc.*	39=177 H.P.	
441	WIGAN	Wigan Corporation	1900	J. Slevin ..	230 & 460 tr. 550	Direct ..	1,960	1,756	375 KW.	£114,061	1,359 KW.	26 arc, 3 N., 20 mtl.	251=1,608 H.P.	136=
442	WILLESDEN	Willesden Urban District Council	1903	J. G. Bruce ..	240 & 480	Direct and 50~, 1-ph.	900	1,395	97 KW.	£195,724	2,943 KW.	212 arc, 200 cbn., 19 mtl.	221=984 H.P.	
443	WIMBLEDON & MERTON	Wimbledon Corporation ..	1899	H. Tomlinson-Lee	D.C. & A.C. 220	50~, 1-ph.	2,685	1,507	..	£198,565	4,725 KW.	89 arc, 1,110 mtl.	84=706 H.P.	
444	WINCHESTER	Winchester Electric Light & Power Co., Ltd.	1898	H. N. Warburton	210 & 420	Direct ..	850	435	85 KW.	£90,586	1,537 KW.	..	76=118 H.P.	
445	WINDERMERE AND AMBLESIDE	Windermere & District Electricity Supply Co., Ltd.	1898	C. Walker (Man.)	100 & 200	100~, 1-ph.	275	134	..	£43,441	488 KW.	129 cbn. ..	17=25 H.P.	
446	WINDSOR & ETON ..	Windsor Electrical Installation Co., Ltd.	1896	A. E. Farrow ..	110 & 220	Direct & 50~, 1-ph.	530 D.C., 100 A.C.*	609	130 KW.	£85,112	1,535 KW. inc. pr. & hg.	Eton, 12 arc, 53×2 mtl.	76=208 H.P.	
447	WISHAW	Wishaw Corporation	1905	Ernest F. Cox ..	240 & 480	Direct ..	300	176	..	£21,839	543 KW.	60 arc, 118 mtl.	95=300 H.P.	
448	WITNEY	Witney Electric Supply Co., Ltd.	1900	F. G. Curel ..	220	Direct ..	120	80	15.4 KW.	£10,518	200 KW.	..	7=53 H.P.	
449	WOKING	Woking Electric Supply Co., Ltd.	1890	J. G. McLean ..	200	100~, 1-ph.	1,175	509	..	£116,550	..	..	14=50 H.P.	
450	WOLVERHAMPTON ..	Wolverhampton Corporation	1895	C. E. C. Shawfield	220 & 440 D.C. 230, 400 A.C.*	Direct & 50~, 3-ph.	5,230	4,180	385 KW & 350 KW.	£247,592	2,548 KW.	62 arc, 207 mtl. 195 N.	419=5,588 H.P	104=
451	WORCESTER	Worcester Corporation ..	1894	C. M. Shaw ..	230, 460 D.C.* 100, 200 A.C.	100~, 1-ph., & direct	2,286	910	150 KW.	£145,410	1,476 KW.	60 arc, 85×2 cbn.	173=927 H.P. 47 radrs.	30=
452	WORKSOP	Worksop Urban District Council	1901	J. Percival Crowther	230 & 440	Direct ..	540	271	..	£28,770	563 KW.	35 arc, 160 mtl.	46=193 H.P.	
453	WORMIT	Tayside Electric & Gas Light Co., Ltd.	1898	E. A. Stewart ..	230	Direct ..	45	20	..	..	234 KW.	..	..	
454	WORTHING	Worthing Corporation ..	1901	G. Porter ..	230 & 460	Direct ..	554	401	69 KW.	£61,341	746 KW.	110 arc, 154+2 mtl.	34=124 H.P.	
455	WREXHAM	Wrexham Corporation ..	1901	W. G. Pickvance	230 & 460 tr. 500	Direct ..	735	400 lg., 200 tr.	..	£41,395	819 KW	43 arc, 35 cbn., 105 mtl., 25 N.	37=133 H.P.	20=5
456	YARMOUTH	Yarmouth Corporation ..	1895	G. Bryant ..	100 & 200 tr. 500	83~, 1-ph.	1,650	1,142	..	£107,026	902 KW.	199 arc, 226 mtl.	38=70 H.P....	
457	YORK	York Corporation . ..	1900	J. W. Hame ..	230 & 460 tr. 500	Direct ..	1,860	1,035	400 KW.	£127,424	2,146 KW.	108 arc, 40 mtl.	194=1,207½ H.P.	

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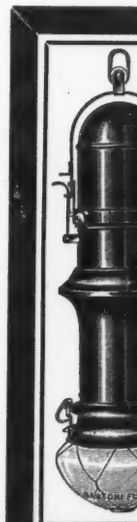
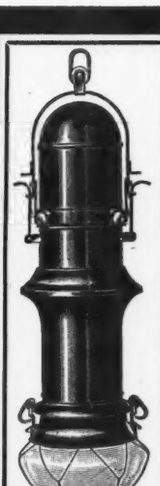


The
FARR

					tr. 1·2	flat rate		Data to Mar. 31, 1910	407
..	2 KW. ..	..	134 KW.	..	Lg. 4½; pr. 2½ & 1½	Flat rate & sliding scale	..	*C. W. Fairweather (Mgr.). Cons. engrs. Mers & McLellan. Data to Dec. 31, 1909	408
.	31=55 KW.	..	243 KW.	27.6	Lg. 4½, or 6 & 2; pr. 2	Max. demand & flat rate	89,097	Data to Mar. 31, 1908	409
87 mtl.	23=80 H.P.	..	379 KW.	8	Lg. 6 (outside 3); pb. lg. arc £18, inc. £3½; pr. 3, 2½, 1; htg. 2	Max. demand and flat rate	192,000 (estd.)	Data to Mar. 31, 1910	410
. ..	..	..	..	..	Lg. 6; pb. lg. £2 4/0 per lamp per annum	Flat rate and contract	..	Evans' own supplied for Ogmore C.; 43 street lps. & pte. supply. Lg. of Thomas Town & Coed Ely in hand.	411
.. ..	9=33 H.P. ..	..	..	16	Lg. 5; pr. 3½	Flat rate and contract	21,418	.. ..	412
07 inc., ernst	6=15 H.P. ..	..	831.5 KW.	..	Lg. 7 & 3; pb. lg. arc £20, inc. £2½ p.a.; pr. 2½	Max. demand and flat rate	..	.. ..	413
.	6=12½ H.P.	..	124 KW. ..	23.5	Lg. 4½; pr. 3; hg. 1½	Flat rate	30,359	*Resident eng., F. Howlett. Data to Dec. 31, 1909 ..	414
..	88=541.3 H.P.	..	958 KW.	220	Lg. 6 & 2, or 5; pb. lg. £16 per lp. p.a.; pr. 4 & 1, or 3 & 1, or 1½ t sw.	Max. demand, flat rate & time switch	530,226	Eng.-in-chief, E. T. R. Murray. Data to Dec. 31, 1909	415
.	..	..	..	..	Lg. 4 & 1½; pr. 1½ & ½	Max. demand ..	3,753,040	Bulk supply to Sale U.D.C. Data to Mar. 31, 1910 ..	416
e arcs	..	..	..	..	.. ..	..	..	Electricity supplied by Rother Vale Collieries, Ltd. Data to April 13, 1910	417
e, 160 12 mtl.	100 H.P. ..	..	2,339 KW.	..	Lg. 6 & 3, or 4½; pb. lg. 1.93; pr. 2½ to 1½	Max. dem., fl. rate, sl. scale & 2-rate m	887,888	*H. Boot, Cons. Engr. Data to Mar. 31, 1909	418
.	75=384 H.P.	..	3,098 KW.	10	Lg. 7 & 3, or 5½ w. free lamps; pr. 4 & 1½, or 2½	Max. demand, flat rate & 2-rate meter	872,054	*Also S. Margaret's o/T., Hampton Wick, Hampton Ct. and E. Molesey Data to Dec. 31, 1909	419
8 cbn., 89 N.	119=1,493 H.P.	27 cars ..	2,483 KW. (ex. tr.)	14.8	Lg. 5 & 2, or 4½†; pr. 2½ & 1½, or 1½ & spl.; tr. 1½ to 1(T side, 1½)	Max. demand and flat rate	1,454,083	Lg. & tr. *Bulk supply, 1,000 KW., from Carville. †Pb. lg., arc £16 & £13; N. £2, p.a. Data to Mar. 25, 1908	420
54 mtl.	65=626 KW.	..	1,161 KW.	..	Lg. 7 (rural), 5 (urban); pb. lg. £2/5/6 per lp. p.a.; pr. 3 & 2½, or 2½	Max. demand, flat rate and contract	882,681	Data to Dec. 31, 1909	421
, 2 mtl., ernst 93 mtl.	35=70 H.P.	..	695 KW.	2	Lg. 7 & 4, or 6; pr. 4 & 1½, or 2½	Max. demand, flat rate & contract	235,416	Data to Dec., 1908	422
	163=1,264 H.P.	..	2,455 KW.	..	Lg. 4 (ch. 3) pb. lg. arc £13½, inc. £2 p.a.; pr. 1½ to 1 (hoists, 2)*	Flat rate	1,082,057	*Electricity for domestic purposes, 1d. p.u. Data to Mar. 31, 1909	423
120 inc.	51=294 H.P.	See other Table	2,190 KW.	11.1	Lg. 4 to 3; pb. lg. arc £20 p.a.; pr. 2; tr. 1½	Sliding scale and flat rate	1,949,126	Lighting and traction	424
10 mtl., N.	158=760 H.P.	36cars=576KW	2,619 KW.	9	Lg. 6 & 2, or 4; pb. lg. £488 p.a.; pr. 2 to 1½; tr. 1½	Max.dem.&flat rate w. dis.	1,690,753	Lighting and traction. Data to Dec. 31, 1909	425
60 inc., nst	390 H.P. ..	See other Table	1,743 KW. (ex. tr.)	..	Lg. 4 w. dis.; pb. lg. 3 & 2; pr. 1½ to 2½	Flat rate	..	Lighting and traction. Gas power..	426
05 mtl.	2=6 H.P. ..	1=15 H.P.	165 KW. ..	5	Lg. 6; pb. lg. arc £12, mtl. £2/12/6 p.a.	Flat rate	64,250	Lighting and traction. Data to Mar. 25, 1910	427
53 mtl.	..	42=798 H.P.	3,866 KW.	..	Lg. 6 & 2, or 4 (ch. 3½); pb. lg. £620 p.a.; pr. 2 & 1; tr. 1½. No mtr. rent	Max. dem., flat w. dis., pr. sl. scale†	2,771,961	Lighting and traction. *220 volts 1-ph., 380 v. 3-ph.; tr. 500 v. D.C. †Also special terms. Data to Mar. 31, 1910	428
70cn.,* (apprx)	110=420 H.P.	..	1,799 KW.	20.7	Lg. 7 & 3, or 5; pb. lg. 3; pr. 2 to 1	Max. dem., flat, sl. scale & 2-rate w.t.sw.	958,000 (estd.)	*Total equivalent 32-watt lamps. Data to Mar. 31, 1909	429
.	426 KW. ..	..	767 KW.	85	Lg. 6 & 1½, or 4 (½d. discount); pr. 1½ to ¾	Max. demand, flat rate & 2-rate meter	223,708	System changed over during year from bulk purchase to self-generating with Mond gas. Data for 1908	430
nc., 6 ast	21=150 H.P.	..	875 KW.	..	Lg. 7 & 1½; pb. lg. 2½; pr. 2½ & 3½ (2-rate, 1 & 3)	Max.dem.,flat,2-rate w. t. sw. & contract	188,000	Data to Dec. 31, 1908	431
160 mtl.	162=1,850 H.P.	30=900 H.P.	2,844 KW.	20	Lg. 4½ & 1½, or 3½; pb. lg. 0.86*; pr. 1½ to 0.75; tr. 2 to 1½	Max. demand, flat rate, sl. sc., & cont.	2,010,608	Lg. & tr. *Pb. lg. £15 p.a., 2 arcs to 11 p.m., 50-C.P. to dawn; 32s., 2 25-C.P. mtl. 11 to dn. Data to Mar. 31 1910	432
232 mtl.	999=7,762 KW.	3,730 KW. ..	15,761 KW.	11.7	Lg. 3 less dis.; pb. lg. 1.5; pr. 1 less dis.; tr. 0.95	Flat rate, with dis., contract, special	19,156,399	*Lighting and traction; also 100 to 6,000 v. A.C., & tr. 500 D.C. Data to Mar. 31, 1910	433
26 mtl.	223=1,957 H.P.	..	3,698 KW.	..	Lg. 4 & 3, or 6 & 2 m.d.; pb. lg. 1¼; pr. 2 to ¾; ckg. 1	Max. dem. & flat rate; pr. sl. scale	2,058,894	Data to Mar. 31, 1910	434
.	23=182 H.P.	24=480 H.P.	1,194 KW.	13	Lg. 7 & 2, or 5; pr. 4½ & 1½, or 2½; tr. 2	Max. demand and flat rate	404,774	Lighting and traction. Data to Dec. 31, 1908	435
4 mtl.	52=110 H.P.	..	1,862 KW.	9	Lg. 7 & 3, or 5½ (slot m., 7 incl.); pr. 4 & 1½, or 2½	Max. demand and flat rate	510,868	*Weybridge, †Walton. Energy transmitted to Walton at 2,500 v. D.C. Data to Dec. 31, 1909	436
22 N., m'l.* 100cbn., ntl.	52=183 KW. (Htr. 53 KW.) 359 H.P.	..	950 KW.	5	Lg. 5, pr. 2½, w. dis.; pb. lg. arc £16½, inc. £4, per post p.a.*	Flat rate with discounts	392,233	*Two cbn. lamps on arc posts; 232 posts with 2 or 4 mtl. lamps=582 lamps. Data to Mar. 31, 1909	437
		..	585 KW.	..	Lg. 4½, or £15 per KW. & 1d. p.u.; pr. 3, 1½ & 1 or £5 p. KW. & 1d.*	Max. dem., flat rate, 2-rate & cont.	255,000	*Pb. lg. 3; hg. £1 & 1d. Data to Mar. 31, 1910	438
.	1=6½ H.P.	..	94 KW.	..	Lg. 8; pr. 2, 3 & 4	Flat rate and contract with dis.	27,220	Connections increased, but demand reduced owing to mtl. filament lamps. Data to Dec. 31, 1909	439
nc.*	39=177 H.P.	..	634.5 KW.	4.8	Lg. 4½†; pb. lg. 4; pr. 2 to 1, or 4½ & 1½ to 1 by 2-rate meter	Hopkinson, flat rate sl. scale & 2-rate	282,280	*9 4-lt. Osram lanterns. †Or £3 per an. per KW. & 2d. per unit. Data to Mar. 31, 1909	440
, 3 N., ntl.	251=1,608 H.P.	136=4,480 H.P.	2,629 KW.	..	Lg. 5, 4, 3; pb. lg. 3; pr. 1 & ¾; htg. 2; tr. 1⅝	Flat rate with discounts	3,110,313	Lighting and traction	441
ve, 200 19 mtl.	221=984 H.P.	..	3,623 KW.	12.	Lg. 8 & 1, or 5; pb. lg. arc £18 4s., mtl. £3 6s.; pr. 1½ to 0.58	Max. demand & flat rate	2,308,320	Bulk supply from North Met. E. P. S. Co. Data to Mar. 31, 1910	442
, 1,110	84=706 H.P.	..	5,407 KW.	12.8	Lg. 4½ to 3½; pb. lg. 2½; pr. 2 (above 2 H.P., 1½)	Sliding scale ..	2,343,289	Motors of 363 B.H.P. pumping sewage. Data to Mar. 31, 1909	443
.	76=118 H.P.	..	1,760 KW.	8.5	Lg. 7, 4, & 2; pr. 4 & 1½.. ..	Max. demand, flat rate & contract	511,812	Data to Dec. 31, 1909	444
n. ..	17=25 H.P.	..	493 KW.	..	Lg. 7; pb. lg. 3; pr. 3½.. ..	Flat rate	110,197	Data to Dec. 31, 1909	445
12 arc, 2 mtl.	76=208 H.P.	..	1,546 KW.	1.4	Lg. 6 w. dis.; pr. £3 p.a. per H.P. & 1d. p.u.; hg. 3 w. dis.†	Max. dem. & flat rate w. discount	601,673	*Adtn'l b'lk s'ply from Slough & Datchet Co. †Pb. lg. arc £22, £16; twin tant. £4½ p.a. Data to Dec. 31, 1909	446
118	95=300 H.P.	..	850 KW.	Decrease	Lg. 4; pb. lg. £1,000 p.a.; pr. 3 to 1	Flat rate	235,440	Total lamps connected decreased; also sales for lighting decreased owing to mtl. fil. lamps. Data for 1909	447
el.	7=55 H.P.	..	200 KW.	15.	Lg. 6 & 5; pr. 2½..	Flat rate	43,600	Gas power. Data to Dec 31, 1909	448
.	14=50 H.P.	..	1,700 KW.	..	Lg. 6½; pr. 4 & 2; htg. 2 ..	Flat rate	619,813	Bulk supply at 2,000 volts to L. & S. W. Ry. Co. Data to Dec. 31, 1908	449
207 mtl. N.	419=5,538 H.P	104=2,000 KW.	6,722 KW.	36	Lg. 5 & 2; pb. lg. arc £20, inc. £2½ p.a.; pr. 1 to ½†; tr. 1½	Max. dem., flat, 2-rate & contract	8,239,720	Lighting and traction. *Tr. 500 v. †Electrolytic works, ½d. p.u. Data to Mar. 31, 1910	450
, 85×2 n. 160 mtl.	173=927 H.P. 47 radrs.	30=750 H.P.	2,845 KW.	..	Lg. 6½ & 3, or 4½; pb. lg. 1.5; pr. 2½ & 1 (rest. hrs. 1); tr. 2 to 1½	Max. demand, flat rate & sl. scale	1,545,772	Lighting and traction; old station water power plant only. *Traction 500 v. Data to Mar. 31, 1910	451
	46=193 H.P.	..	763 KW.	8½	Lg. 4; pb. lg. arc £15, inc. £3; pr. 1½, or 4 & 1 (2-rate); htg. 1	Flat rate with discounts, & 2-rate	356,885	Data to Mar. 31, 1910	452
.	..	..	234 KW.	..	Lg. 5	Flat rate and con.	5,000	Suction-gas plant. Data to April 12, 1910	453
are, 2 mtl.	34=124 H.P.	..	836 KW.	..	Lg. 5 & 4½, and special; pb. lg. 4.48; pr. 1½	Flat rate and 2-rate mtr., with dis.	466,524	Data to Mar. 31, 1909	454
35 cbn., ., 25 N.	37=133 H.P.	20=500 H.P.	1,376 KW.	7	Lg. 5, or 5 & 2½ (½ dis.), outside arc 3½*; pr. 2½ to 1½ (½ dis.); tr. 2½ to 1	Flat rate & sliding scale with dis.	545,480	Lg. & tr. *Also 12½% on net ast. & 1d. p.u. Pb. lg. arc £20, £15, N. £4½., inc. £3 3s. & £2½. Data to Mar. 31, '10	455
ce, 226 el.	38=70 H.P...	..	..	..	Lg. 5, less 5%; pb. lg. arc, £16 p.a.; pr. 2½ A.C., 2 D.C.	Max. dem., flat rate w. dis., cont., t. sw.	1,610,554	Lighting and traction. Data to Mar. 31, 1910 . ..	456
40 mtl.	194=1,307½ H.P.	..	2,97 KW.	10.9	Lg. 7 & 1½, or 4½ to 3½, ch., &c., 3; pr. 1½ to 1*; tr. 2	Max. dem., flat, 2-rate mtr., spl. & com.	1,488,700	Lg. and tr. stn. *Pb. lg. arc (open) £17, (enc.) per pair £12 12/0; inc., £2 17s. p.a. Data to Mar. 31 1910	457



THE . . .

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FLAME LAMP

First for Efficiency and Reliability.

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FARRINGDON AVENUE, LONDON, E.C.

HART

ACCUMULATOR CO., LTD.

CENTRAL STATION STORAGE BATTERIES

WITH OR WITHOUT BOOSTERS.

We can fit renewal plates to existing boxes on easy terms of payment.

LET US QUOTE.

trenches were opened directly in front of his house, and were kept open owing to a blunder in relation to the gas and water mains passing over the bridge. The damage arose from the blocking up of access to the shop, and from his flowers being covered with dust of cement beaten out of the bags. His plants were destroyed by frost because he was unable to put up his shutters at night.

His Lordship, at the close of the plaintiff's case, held that there was no evidence of negligence in the mode of construction, but that there was evidence of damage to the plaintiff's stock from the shaking of cement bags, which had been estimated at £30.

For the defence, evidence was given showing that the gas company, the Water Board, and the Post Office, had taken part in the work, and had used cement, of which about 60 tons in all were used, but the Council's contractors mixed none outside the plaintiff's shop. The electric tramway track, it was said, was laid independently of the bridge reconstruction.

The jury found a verdict for the plaintiff, and assessed the damages at £33.

Muir *v.* Sulfano.

The Master of the Rolls and Lords Justices Farwell and Kennedy heard an application by the defendant in this action for judgment or a new trial. The action, which was tried by Mr. Justice Lawrence and a special jury, related to a commission note given in respect of the Argentine Electric Railway.

The plaintiff sought to recover £4,000 in cash or fully-paid shares as commission for the introduction of business to the defendant. The defendant denied that any commission was due to the plaintiff, and that any business had resulted from the arrangement in respect of which the plaintiff would be entitled to any commission. The plaintiff's case was that in September of 1907 he heard that a concession had been granted for the construction of a railway in the Argentine, and that it belonged to a Mr. Machadov. He told the defendant that he was in a position to get the concession conveyed to him, and the defendant gave him a commission note headed—The Argentine Electric Railway (Machadov concession). Without giving plaintiff any information, defendant sold the concession to the Rosario and District Railway Syndicate. The plaintiff contended that the commission note was not limited to the ultimate purchase, but became payable immediately the defendant dealt with the concession, and was paid for it. The learned judge in the court below held that the case was one of construction of the contracts, and that there was no case to go to the jury. As the concession was sold for cash and shares, judgment was entered for the plaintiff for £266 and 2,734 shares. For the defendants it was now argued that the judge was wrong in withdrawing the case from the jury, as there was an important question of fact to be tried.

Their Lordships held that the appeal was unarguable, and without calling upon Counsel for the respondents, dismissed it with costs.

Wolfram Ore Dispute

In the Lord Mayor's Court last week, Messrs. Edwards & Co., metal merchants, 5, Fenn Court, Fenchurch Street, E.C., sued Mr. Joseph Bedford, metal merchant, of Sheffield, to recover damages for breach of contract for the supply of wolfram ore. The defendant, in his pleadings, denied any agreement.

For the plaintiffs it was stated that in October last year they had a prospective buyer for wolfram ore, which, it was stated, was used in the manufacture of incandescent electric lamps. The plaintiffs' agent agreed to purchase 2½ tons of the ore from the defendant at a cost of about £200. It was arranged between the parties that the ore should be free from arsenic, tin and copper, and it would only be accepted on those conditions. When the ore was delivered it was submitted to the assayer, who found it contained 12·80 per cent. metallic tin and ·24 per cent. arsenic, and plaintiffs' buyers refused to accept delivery. Subsequently the price of the ore rose, and the plaintiffs were obliged to pay £20 more for other ore. They claimed for this amount, together with a sum of £3 11s. 11d. which would have been their commission had the ore been delivered according to contract.

In the course of evidence it was stated that there was no regular market for wolfram ore. It was a mineral that came into the market in an irregular fashion. The price of wolfram ore during the month of October was 28s. per unit; in November the price went from 31s. 6d. to 40s., and by the middle of November it was 37s. 6d. There were ores that were absolutely free from arsenic, tin and copper. The custom of the trade was for the seller to give some indication of the quality of the ore for disposal. Payment for the ore, by the custom of the trade, was made dependent upon the analyst's report.

The jury eventually found a verdict for the plaintiffs for the amount claimed, and judgment was entered accordingly, with costs.

British Columbia Electric Railway Co., Ltd.

In the Chancery Division, on Tuesday, Mr. Justice Swinfen Eady had before him a petition by the above company for the sanction of the Court to a resolution passed for the extension of its objects.

Mr. Younger, K.C., in support of the petition, stated that the company was formed in 1897 with a nominal share capital of £2,500,000. It had also a debenture issue amounting to £1,330,000. The company was very prosperous, and paid a substantial dividend. The proposed extension would not increase its burden, and nobody would be injured by the proposal. The proposed extension was to enable the company to construct, acquire and own gasworks and apparatus, and to supply gas. It was also proposed to purchase, acquire, and own land and immovable property and rights of every description relating thereto, and to turn such rights into account by prospecting and working for coal, iron, &c., and by dealing in timber, lumber, and other products of the soil. All the proposed objects were subsidiary to the main object of the company, which was to carry on the business of telegraphy, telephony, and a light and heat supply company. Though formally a railway company, it supplied electrical power for commercial purposes, and the proposed extensions would enable it to carry on its business more conveniently, and other classes of business which in existing circumstances might be conveniently and advantageously combined with its present business.

His Lordship sanctioned the extension as proposed.

BUSINESS NOTES.

Americans Cultivating China.—In response to the invitation of the Shanghai Chamber of Commerce, some 45 American commercial men, representing nine Chambers of Commerce, will leave the States on September 20th for a tour through Chinese manufacturing and shipping centres, including Shanghai, Nanking, Hankow, Peking, Tientsin, Amoy, Chefoo, Foochow and Canton.

Winnipeg Industrial Exhibition.—This annual event will be held from July 13th to 23rd. A great deal of attention is being devoted to automobiles and all labour-saving appliances for use out in Western Canada. There is to be a special department devoted to electrically-operated machines and devices. An American Consul reports that out West all electrical labour-saving devices are eagerly bought. Power is to be furnished free during the Exhibition, and exhibitors will secure freight rebates and relief from duties.

The Garden of Eden.—Prince Edward Island must be an interesting place of silence and solitude for dreamers. The Legislature has unanimously refused to repeal its law which prohibits any form of motor-vehicle from running on its public highways. An American syndicate wanted to run an electric tramcar system, but refused to accept the charter provision that no cars should run on Sunday. Therefore, it is reported, save for a narrow-gauge railroad, travel remains as it was before the advent of steam power.

Brown-Boveri in Austria.—A new enterprise, under the title of the Austrian Brown, Boveri Works Co., has just been formed in Vienna by the Swiss firm of Brown, Boveri & Co., of Baden, in association with the Lower Austrian Discount Co., the Hungarian Commercial Bank, and the United Electricity Co., of Berlin. The new company, which has a share capital of £187,000, will take over the works of the United Co. for £83,300 in shares, whilst the remainder of the shares has been subscribed by the other interest mentioned. The company will develop the Vienna works on the lines pursued by the Swiss firm, and the first transaction to be taken in hand, will be the provision of the machinery for the Witkowitz-Neudorf local railway, for the working of which a separate company has been constituted with a capital of £62,500. With the transfer of its works, the United Co., which already possesses a majority of the shares in the United Glow Lamp and Electricity Co., of Buda-Pesth, and in the United Electricity and Machine Works Co., in the same city, will in future be a trust or investment company on similar lines to those pursued in Germany. This will be effected by the issue of bonds, the emission of which is said to have already been granted in principle by the Government.

Publicity Matter for Electric Supply Undertakings.—The Electric Supply Publicity Committee of London and District have now made a further issue of publicity matter in the form of a small four-page illustrated folder on ventilation (under the title of "Electricity and Pure Air") and an illustrated mail card touching on the uses of electricity for the seasons—the fan for summer, the radiator for winter, the griller and kettle all the year round. Each of these are of a suitable size for enclosing with correspondence to consumers, so that the distribution can be effected without cost. A further very useful work of the Committee is in newspaper advertising in London papers. Various big advertisements have appeared from time to time in the evening papers, the policy of the Committee being to follow up by the issue of circulars, mail-cards, or posters, with a collateral appeal in the Press. The last effort in this direction took the form of two full-page illustrated advertisements dealing with the various uses of electricity in the home. These appeared in the *Westminster Gazette* consecutively about a week apart. Such advertisements as these ought to help electricity supply business generally.

Odessa Exhibition.—A contemporary in reporting the opening of this Industrial Exhibition, says that the number of exhibitors exceeds 13,000 (?), and 79 of them are foreign. The contributing countries outside Russia are America, England, Germany and Austria-Hungary. Amongst the most striking sections are those relating to mining and aviation.

The Thomson Police Lamp.—The advantages of the electric lamp for police work have not been universally recognised, although several police forces have used electric lamps for years. The late Chief Constable of Dundee, Mr. D. Dewar, and his successor, Mr. J. Carmichel, determined to make this change as soon as they were assured of the efficiency of the electric lamp. With the co-operation of the burgh engineer, Mr. H. Richardson, they carried out a number of experiments and tests, and consequently, last year the Dundee Town Council sanctioned a complete supply of lamps for the members of the force. Subsequently, Major Fergusson, H.M. Inspector of Constabulary for Scotland, in his annual report, commented favourably on their adoption, and pointed out that a better light is obtained, clothes are not spoiled by the oil, fumes no longer rise to the men's faces, and chills hitherto produced by heating the body when carrying the oil lamp under the cape in wet weather are avoided. The light is maintained in any position, an important feature when inspecting property, and wind and other disturbances peculiar to police work do not extinguish the light. The weight is the same within one ounce or so and suspended from the belt; the bulk of the weight being near the body, there is not the leverage as in the oil lamp where the conditions are the reverse. For ordinary work a 2-volt lamp is used by the uniformed men, and the well-known pocket type by the plain clothes officers, but for special and dock work a 4-volt lamp is used invariably. It is easy to convince a chief constable that the electric lamp is the police lamp of the future, but the necessity for recharging the accumulator occasions misgivings. The operation, however, is satisfactorily performed by the men who originally trimmed the oil lamps, but success is largely due to the simple arrangements installed by Mr. Richardson for handling the lamps; we understand that the cost actually comes out cheaper than with the oil lamp. The experiments disclose the fact that a constable's duty examining property at night requires a light equivalent to four hours' continual burning, and although the accumulators are tested before they are served out, it is not necessary to recharge every day. The lamps are all numbered and stacked away on suitable racks. The recharging equipment consists of a number of resistance lamps and flexibles and clips with the polarity properly marked, the accumulators being joined up in rows of ten and treated with distilled water before being put in charge for a given number of hours. Special boxes of distinctive colours are provided for dispatching the lamps to the outlying districts, and these are placed on a tramcar and met at the other end. This work has been done by Messrs. L. E. Wilson & Co., of 20, Cross Street, Manchester, and of Liverpool, who have made a special study of these electric lamps for all purposes. We learn that they are just now actively engaged with other police forces in the kingdom, so we may hope for further advance in the near future.

Foster Metallic Lamps.—The Foster Arc Lamp and Engineering Co., Ltd., of Wimbledon, inform us that they have just heard from some friends abroad to whom they sent a large consignment of their metallic lamps, that not a single lamp arrived broken, a fact which speaks well for the efficient method of packing employed—a very important matter. They are keeping large stocks of these lamps, and can give prompt delivery of both high and low voltage. They have also recently introduced a train-lighting lamp, which is mechanically very strong, and calculated to withstand considerable vibration. They will be pleased to send particulars to any of our readers.

An American View of German Banking.—An American Consul at Frankfort, in reporting upon the profitable business done by the Deutsche Bank in 1909, with its enormous turnover of over a hundred thousand million marks and its dividend of 12½ per cent., says:—

"This great financial institution has been and still is a powerful factor in German progress at home and abroad. It has financed and built various railroads in Oriental countries, thereby furnishing profits to German industries and employment to thousands of German workmen at home and abroad. It has branches in various South American cities, in London, Brussels, and Constantinople, and financial connections the world over. The bank and its branches and agencies promote German exports to and German mechanical and engineering enterprises in foreign countries, without which Germany could not maintain its over 60,000,000 people on an area less than that of the State of Texas."

A District for New Works.—From the Publicity Department of the Great Central Railway Co. we have received a pamphlet, with a cover which holds out a handful of profits in a manner calculated to catch the fancy of all in the electrical industry. It tells of "an unique opportunity," and upon looking within we find that the opportunity is that offered by North East Lincolnshire as an industrial centre for the establishment of successful enterprises. The new Immingham Docks, five miles up the Channel from Grimsby, which are to be opened shortly, together with other claims, are expected to attract industrial enterprises to the district.

Bankruptcy Proceedings.—John Patrick Leo Donlevy, consulting electrician, 123, Tulse Hill, S.W.—On Wednesday, at Bankruptcy Buildings, Carey Street, W.C., the statutory first meeting of creditors was held under the Receiving Order made against this debtor on June 3rd. The Senior Official Receiver, who presided, reported that the debtor had stated that he was formerly assistant manager of ironworks at Croydon. He was afterwards engaged in working on his inventions, which were chiefly connected with telegraphic and typewriting apparatus. Early in 1906 he placed them before an electrician, who undertook to form a syndicate; but that was never done. The debtor attributed his failure to his connection with the said electrician, and to liability under the lease of 123, Tulse Hill. No statement of affairs had been filed, but the unsecured debts were estimated at £250, while the debtor said that his assets comprised a claim for the same amount against the before-mentioned electrician. He consequently denied that he was insolvent. An order of adjudication had, however, been made by the Court. An opinion had been expressed that certain of the patents were of value, and a resolution was passed for the appointment of Mr. Harry Wilson, incorporated accountant, Devereux Court, Strand, W.C., as trustee in bankruptcy to deal with them and with the estate in general. A committee of inspection was also appointed.

In the High Court of Justice in Bankruptcy, on June 2nd, the adjudication of December 9th, 1904, in the case of George Huntington, electrician, Battersea Rise and Dering Street, Bond Street, London, was annulled, it appearing to the Court that the debts had all been paid in full.

Liquidations.—North-Western Electricity and Power Gas Co.—A petition for winding up this company, presented by several contributories, is to be heard at Manchester on June 29th.

Laidler, Ritchie & Co., Ltd., electrical and mechanical engineers, Pink Bank Lane, Longsight, Manchester.—Owing to purely private reasons, the company has decided to discontinue business and is to wind up voluntarily, with Mr. W. C. Laidler as liquidator.

Trade Announcements.—Messrs. Lind & Co., Ltd., electrical suppliers, have this week removed to 1, Dawson Street, Whitechapel, Liverpool, where they have a large showroom now preparing for the display of the various lines represented by them. The showroom will be ready on July 1st.

The Sunbeam Lamp Co., Ltd., have removed their London district stores department to 58, Berners Street, W., where they will be holding larger stocks of lamps, and of everything electrical, to meet their increased business. Correspondence is still to be addressed to the office, 102, Charing Cross Road, W.C. Telephone Nos.: Office, 9339 Central; Stores, 2855 Central.

Messrs. Fredrick Ryman & Co. are to-day removing their office and works to 116, Livery Street, Birmingham—one minute from their late address in Cox Street.

Catalogues and Lists.—The Scientific Appliance Manufacturing Co, 15, New Oxford Street, W.C.—New catalogue (56 pages) giving illustrations and prices of a variety of electrical materials and apparatus—batteries, induction coils, bells, telephone, wireless telegraphy and motor-car parts, small motors, &c. A separate list gives prices of lenses, drawing instruments, thermometers, &c.

The British Insulated and Helsby Cables, Ltd., Prescot.—20-page excellently illustrated pamphlet (L 39), stating prices, &c., of various telegraph and telephone apparatus, including sounders, condensers, linemen's detectors, repeater boards, "Soudan" Simplex set, quadruplex set (Decrement system), "B.I." closed circuit system, magneto table telephones, pole boxes, testing pillars, &c. The list is supplementary to the firm's telegraph and telephone catalogue.

The Electric and Ordnance Accessories Co., Ltd., Aston, Birmingham.—Eight-page illustrated list (No. F 86), giving particulars and prices of various "E.O.A." small ventilating fans, most of which can be run on ordinary lighting circuits. Desk, bracket, pedestal, cabin, porthole, ceiling and railway carriage types are all shown.

Messrs. Clarke, Chapman & Co., Ltd., 29, Queen Anne's Chambers, London, S.W.—Illustrated leaflets showing their Woodeson patent water-tube boilers for marine and land installations; also their single-feed pumps.

Messrs. James Gordon & Co., 81-3, Knightrider Street, London, E.C.—64-page catalogue, which is packed full of information concerning the firm's Samson Upright and Francis turbines, governors, Pelton wheels, and complete plant for the development of water-power. Among a number of excellently produced half-tone views we find pictures of the Cauvery Falls, Mussorie, and Jammu electric installations, a 2,000-h.p. hydro-electric plant, internal and external views of turbines, and so forth. A great deal of general and tabular matter of value to water-power engineers is also given in what is certainly, to our mind, a very serviceable and interesting catalogue.

The India-Rubber, Gutta-Percha, and Telegraph Works Co., Ltd., Silvertown.—New and tastefully got up dynamo and motor list (No. 37). It contains specification particulars of the "Silvertown" multipolar F.E. and F.E.P. type machines, with tabulated weights, measurements, prices, and so forth carefully set out. Open protected, totally enclosed, and ventilated enclosed types are supplied; a "Silvertown" ship lighting set and a Silvertown-Bellis 700-kw. generating set, are illustrated. Effective printing is secured by alternate pages only being occupied.

Messrs. J. G. Ingram & Son, London India-Rubber Works, Hackney Wick, N.E.—New supplementary price list of india-rubber gloves and gauntlets for electrical men.

Messr. Cookson & Co., Albion House, New Oxford Street, W.C.—Price leaflet of accumulators for electric launches, electric carriages, &c.

The A.E.G. Electric Co., Ltd., 121-125, Charing Cross Road, W.C.—Fully illustrated brochure of 40 pages, giving information regarding the A.E.G. installations of electricity in textile factories on the Continent. A list of spinning-mill installations fitted with individual drive is followed by many pages devoted entirely to half-tone blocks of electrically-driven scutchers, carding machines,

drawing frames, fliers, and ring-spinning machines. There then is given a list of weaving mill installations fitted with individual drive, with illustrations of loom motors, gear drives, belt drives, &c.

Schiersteiner Metallwerk, G.m.b.H., Schwerinstr. 3, Berlin W. 57.—Leaflets relating to lanterns and illuminated sign-letters, &c.

The Electrical Co., Ltd., 121-125, Charing Cross Road, London, W.C.—Four-page price-list of electric fans of the table, ring, wall, adjustable, oscillating, ceiling and shaft types.

Book Notices.—Messrs. W. T. Glover & Co., Ltd., Trafford Park, Manchester.—Messrs. Glover's ninth almanac, for the ensuing 12 months, has just come to hand, and is very welcome, containing the usual collection of technical notes and aphorisms, views of Glover's work at numerous towns, humorous sketches and verses. There is a vast amount of useful practical information buried in the proceedings of our engineering societies, and Messrs. Glover do a real service to the industry by digging out these titbits and serving them up in this attractive form. They are by no means confined to cable matters, but range over a wide field of technical subjects.

"Handbuch der Telephonie." By Dr. Victor Wietlisbach. 1910. Vienna: A. Hartleben. Price 12 M.

"The Design and Construction of Oil Engines." By A. H. Goldingham. Third edition. 1910. London: E. & F. N. Spon, Ltd. Price 10s. 6d. net.

Motor Vehicle Contract.—Messrs. Sturmey Motors, Ltd., of Coventry, have booked a contract for 110 motor-vehicles for Rio de Janeiro, Brazil, the contract running into from £65,000 to £70,000.

American Activity in China.—At the exhibition which opened at Nanking in China on June 5th American firms are very strongly in evidence in their own building. The electrical exhibitors include the General Electric Co., H. W. Johns Manville Co., and Kellogg Telephone Co. According to an American Consular report an electrical installation equal to 25,000 lights is provided, British plant furnishing energy for 10,000, American for 8,000, and German plant for 6,000. A 1,500-light plant has been sent up from Canton.

For Sale.—On Tuesday, July 19th, Mr. W. H. Robinson will offer for sale by auction at Manchester, the works, machinery, plant, &c., of Wm. Brown & Sons, contractors and builders, Salford, concerning which an advertisement appears in our pages to-day.

Annual Outing.—On Saturday, June 11th, the employés of Messrs. E. Brook, Ltd., Huddersfield, had their sixth annual excursion, Liverpool and New Brighton being the towns visited. Mr. Hewitson acted as secretary. Arrangements had been made for the workpeople to visit the Cunard liner *Carmania* and various places of interest. At the dinner the workpeople tendered their congratulations to the directors (who had paid the expenses) on the turning out of their 6,000th motor; this motor is one of a batch for New Zealand, and the output named has been accomplished in less than six years, a steady and regular business in their particular line having been done by the firm.

Water Softeners.—The Seck Engineering Co., Ltd., 48, Mark Lane, E.C., have just installed one of their standard type water softening and purifying plants at the works of the Imperial Lamp Works (Brimsdown), Ltd., Brimsdown, Middlesex, for treating the feed of a Babcock and Wilcox boiler, under an absolute guarantee of immunity from the formation of scale at a fixed working charge, which it is also guaranteed shall not be exceeded.

LIGHTING and POWER NOTES.

Aldershot.—A L.G.B. inquiry was held on June 14th into the application of the U.D.C. for a loan of £1,500 for electric light purposes, £250 being for a machine stoker and the balance for mains, services, &c. The inspector (Mr. H. R. Hooper) objected to the Council pooling loans, and amended the application to £2,270. There was no opposition.

Ashford (Kent).—The East Ashford B.G. has received an estimate for installing the E.L. at the workhouse. With the building, the cost of the plant and installation is estimated at £350, and the annual cost at £20, with £30 for depreciation and renewals. The Board favours the adoption of electricity, and has decided to obtain information from other workhouses using electricity.

Atcham.—The B.G. is considering the question of lighting the workhouse, and an estimate of the cost of installing and maintaining an electrical plant has been prepared by Mr. C. M. Johnston, the borough electrical engineer of Shrewsbury.

Atherton.—The Electricity Committee of the D.C. has dealt with the question of electrical supply to part of Westhoughton district, and has directed the clerk to give the B. of T. an undertaking that the counsel will pay all costs and charges in connection with the reference of the draft order to counsel. This action is in reply to a communication from the B. of T.

Ayr.—A scheme for the extension of the Corporation area of electricity supply to include Prestwick and Alloway has been under consideration for some time. The engineer estimated that an extension to Prestwick would cost £5,000. At a meeting of the T.C. he reported that he had issued 273 postcards to the principal residents there to ascertain whether there was a general desire for the electric light in Prestwick. In answer he received 57 cards stating that the matter would be favourably considered, and seven from persons who were unfavourable. In the circumstances, the Council decided not to proceed further in the matter.

Barnet.—Subject to the approval of the L.G.B., tenders are to be invited by the Guardians in regard to the scheme for providing electric light and power at the workhouse, at an estimated cost of £700.

Burnley.—In his annual report Mr. Starkie, the Corporation electrical engineer, states that the units sold for lighting and motor purposes showed an increase over the previous year equal to 12·77 and 17·54 per cent. respectively (against 5·02 increase and 1·50 decrease last year), though the units for traction purposes were down ·81. The total units sold was 3,249,387, an increase of 100,512, or 3·19 per cent., as compared with an increase of 1·28 per cent. last year. From these figures, the engineer states, it appears as though the department had now experienced the full effect of the metallic-filament lamp, and that all sales in the future will be in something like the same proportion as the lamps connected, which still keep steadily increasing. The department has had a very successful year, and taking into consideration the fact that at the present time interest and sinking charges are approaching the maximum, it follows that with increasing revenue and decreasing capital charges and generating costs, the next few years should show still better results. The capital expenditure is £112,242, and £83,570 is owing on mortgage loans. The total costs, excluding interest and sinking fund, were £11,912, against £11,680 last year, and the net income from all sources amounted to £22,998, against £21,686, representing a net gain on revenue account of £1,080. The net profit was £4,148, a decrease of £21, but although the net profit is below last year's, it is £987 more than estimated, and enabled the department to increase its estimated contribution to the rates by £500. The profit was disposed of as follows:—£3,500 to the borough fund for relief of rates (£3,000 last year), and £648 to the depreciation fund. The balance of reserve and depreciation funds now stands at £18,538, which represents 16½ per cent. on the total capital expenditure, or 22 per cent. of the amount still owing. During the year the generating plant has been increased by an additional 750 kw., and although not loaded to its full capacity, it has been found more economical to run the new set at three-quarter load in preference to a smaller set at full load.

Clayton West.—The U.D.C. has decided to open negotiations with the Yorkshire Electric Power Co. with a view to obtaining a supply of electricity in bulk.

Devonport.—At the last meeting of the B.C. it was decided that the recommendation of the Electric Power Committee that the net profit for the past year be transferred to the reserve fund, be referred back to the Committee with a view to considering the desirability of applying part of the profit to the relief of rates. The matter was again considered by the Committee on Monday, when it was decided to confirm the original recommendations. The question of the salary of the engineer was also reconsidered, and the previous recommendation that the salary be increased from £300 to £350 per annum by two annual increments of £25 each, was also confirmed.

Dover.—At a recent meeting of the Electricity Committee the estimate for the year 1910-11 was presented. The gross profit estimated was £13,580, as against £12,106 last year. In reply to the Mayor, it was stated that the Admiralty had promised to commence its contract this month, and this was the reason for the anticipated increase of profit.

The T.C. has decided to illuminate the sea front by electrical festoons during July, August and September, at a cost of £120.

Fleetwood.—The electrical engineer has been directed to prepare an estimate of the cost of lighting all the streets in the town with electricity instead of gas.

Freshwater.—The P.C. has decided to ask the Isle of Wight R.D.C. whether it is not possible to utilise the engines at the pumping station for generating electricity, in order that the parish may be properly lighted on dark nights.

Hastings.—The annual financial statement of the electricity department of the T.C., for the year ended March 31st, has just been issued, and although resulting in a deficit, is an improvement on the previous year. The gross profit has been £7,923, but there is a deficiency on the year's working of £2,919. A year ago the deficiency was £3,801. The ordinary expenditure amounted to £17,627, but sinking fund, interest, &c., swallowed up an additional £10,842. The debt outstanding on March 31st was £118,057. The total number of consumers is 1,067 as compared with 1,001 a year ago, and the number of public lamps has been slightly increased. A table of statistics shows that the total profits of past years have amounted to £1,473, but the aggregate of the deficiencies come to £13,961. The total loan charges during the period have amounted to £102,161.

Hindley.—The U.D.C. has decided to make application to the B. of T. for a further extension of time, with reference to the E.L. order.

Llandudno.—The U.D.C., on June 16th, decided to restore the electric arc lamps for lighting the promenade, which has for two years been illuminated by incandescent gas.

London.—Southwark.—The Electric Light Committee has reported upon various points in the district auditor's report upon the accounts of the electricity department for the year ended March 31st, 1909. The auditor said:—"So great is the variety of the terms which have been arranged with different consumers that it cannot at present be said that any agreed scale of charges exists." The engineer and manager replying to this states:—"So far from there being no fixed scale of charges, I would point out that out of a total of 792 consumers, 190 are supplied on the maximum demand rates and 528 on the flat rates of 4½d., 4d., and 2½d. per unit for lighting and power. Special rates have been granted to 74 consumers, which, in the majority of cases, are average prices derived from the maximum demand rates, and cannot be classed as special rates. The correctness or otherwise of the charges can be verified without difficulty, and where explanations were necessary the information could have been given during the audit." With a view, however, of meeting the district auditor's requirements, the engineer has at the request of the Committee worked out a scale of charges which it is hoped will simplify the present maximum demand rates, and include as many as possible of the special charges now in use, although it would appear impossible to fix a scale sufficiently comprehensive to cover all future applications, and in all probability it may be necessary, in certain cases, to grant special terms as heretofore, although it will be the object of the Committee to limit the number as far as possible.

Westminster.—The Assessment Committee reports that an appeal was entered by the Kensington and Knightsbridge Electric Lighting Co., Ltd., against the Supplemental Valuation List dated May 30th, 1908, for the Parish of St. Margaret and St. John, in respect of the omission of the part of the undertaking of the company in that parish. The correction which the company desired to have made in the list, was that the property should be inserted therein at a reduction of £900 rateable value. By agreement the appeal came before the arbitrators and an umpire, and a special case was subsequently stated for the decision of the High Court. The matter was referred back to the umpire, but a settlement has since been effected on the terms that the property of the company be inserted in the Supplemental List in question, at a reduction of £400 rateable value, that the appellants and respondents respectively bear their own costs, and that the Committee pays one-half of the umpire's fees.

Battersea.—The electrical engineer reports that since adopting carbon brushes for the turbine generator sets, the machines are more reliable and efficient, and the committee has decided that the necessary works be carried out for providing and adapting the gear for carbon brushes to the remaining turbine generator sets at an estimated cost of £85 10s. Application is to be made to the L.C.C. for a loan of £18,909 for extending mains, &c.

Hammersmith.—The borough accountant reports that the gross receipts of the electricity department for the year ended March 31st, 1910, were £53,433, and the gross expenditure £28,278. After payment of interest and instalments of loan, a net surplus for the year of £3,482 is shown.

Hampstead.—The receipts of the undertaking for the year ended March 31st last amounted to £60,270, as against £62,879 in the previous 12 months. The Electricity Committee reported at the last meeting of the Council having had under consideration the question of carrying out a further portion of the works recommended by Sir Alexander Kennedy, and it recommended that further plant be installed at the station to the total amount of £6,600 (condensers, £3,100, and cooling towers, £3,300). The Committee reminded the Council that on April 21st last an estimate of £8,515 was passed, so that the total estimate up to date was £15,115, out of the total of £18,000 estimated by Sir Alex. Kennedy. The recommendation was agreed to.

Norwich.—On Tuesday, Mr. H. R. Hooper, C.E., held an inquiry on behalf of the L.G.B. into an application made by the T.C. for permission to borrow £17,783 for the purposes of its electricity undertaking. The town clerk stated that the loan now applied for was proposed to be expended as follows:—Exhaust steam turbine, with condenser, steam, exhaust and water pipes, generator, cable, switchgear, &c., £5,000; centrifugal pump for circulating water, £200; balancer for mains, £160; coal elevator £150; by-pass flue from new boiler to shaft, £70; Paterson feed-water filter for dealing with 4,000 gallons per hour, £203; mains and services, £12,000; total, £17,783. The city accountant stated that the total capital expenditure upon the undertaking to the close of March, 1910, was £312,374. The Inspector said he should like to draw the careful attention of the Electricity Sub-Committee to the question as to how far they were saving by borrowing money for services at all. Mr. Wild, chairman of the Sub-Committee, said he gathered that the Inspector deprecated the dispersion in rate aid of money which might be made by the undertaking. The only time the Sub-Committee had departed from this principle was last year, when £1,200 was practically wrung from it. Upon the whole, the Council backed the Sub-Committee up, but there was a great deal of clamour for rate aid a year or two ago.

Nottingham.—The accounts of the Electricity Committee showed that the income during the year ended March 31st was £92,459. Of this £89,607 was from sale of current, £1,649 from rent of meters, and £811 from public lighting. A balance of £44,970 had been carried to the net revenue account, and the principal items of expenditure were £31,964 for the generation of electricity, £1,882 for the distribution, and £47,489 for general charges, including salaries. The net revenue account showed a total expenditure of £45,742, of which £13,191 was for interest on consolidated stock and loans, £13,204 instalment for repayment of loans, and £16,700 in aid of the general district rate. Sir John Turney, in moving the adoption of the report, said the increase in output during the year had been the smallest since the undertaking was started. The work was being carried on as economically as possible, and the Committee regretted that the profit for the year was not larger, especially when they took into consideration the fact that they paid £1,800 less for coal. But for that good slice of luck there would have been a big falling off. He would call the attention of the chairman of the Finance Committee to the fact that they had received an intimation from the Assessment Committee, that although they were paying £6,000 out of their earnings in rates and taxes, the assessment was to be increased, so that another £4,000 would have to be taken out of their earnings if the assessment was insisted upon. Councillor Cook regretted that the Committee had not seen its way to introduce the flat-rate system. He asked that the matter should be again taken into consideration. The report was adopted.

Monaghan.—It is understood that the scheme for the lighting of this town by electricity has not been dropped, and that another public meeting will be held at an early date. It will be remembered that there was considerable opposition by the local gas company to the scheme, and some amusing scenes occurred at the first meeting.

Oswaldtwistle.—The U.D.C. has declined to give permission for the Accrington Corporation to supply Messrs. Kay and Grimshaw with electricity for motive power. A sub-committee of the Council has been appointed to consider the question of generating and supplying electricity.

Penmaenmawr.—The U.D.C. has decided to illuminate the promenade by electricity, in preference to petrol or coal gas.

Radcliffe.—The result of the important inquiry recently held at Radcliffe, arising out of the local supply of electricity, came to hand on Monday morning. The Lancashire Electric Power Co., who have a station on the borders of the township, applied to the B. of T. for a provisional order to supply energy in the town, in spite of the fact that the Council possess monopoly rights. The company contended that it was to the commercial interests of the town that there should be a large and cheap supply of electric power for motive purposes, and the District Council's reply was to the effect that if large supplies were needed, the Council could come to terms with either the Bury Corporation or the Power Co., but in the interest of the ratepayers, the Council ought to retain its monopoly powers.

The B. of T. decision is in favour of the Council, the company's application for the provisional order having been refused. The B. of T., however, say that, from the evidence produced at the inquiry, it appeared that the facilities afforded to power users in Radcliffe to obtain a supply of energy at a reasonable rate, were inadequate, and in the opinion of the Board, should be promptly extended, either by varying the arrangement entered into by the Council and the Board in June, 1906, or otherwise. In the event of the company making fresh application for a provisional order in respect of the district at some future date, and on it being shown to the Board that the demand for energy for power purposes is not being adequately met, the Board may find it necessary to arrive at a different conclusion to that now conveyed.

Rawtenstall.—The T.C. has decided to apply to the L.G.B. for sanction to borrow a further sum of £11,000 for electricity purposes.

Rugby.—At Tuesday's meeting of the U.D.C., the Electric Light Committee reported that it had for some time been in negotiation with the British Thomson-Houston Co. with the object of obtaining more favourable terms of supply of electrical energy, and dispensing with the expenditure of any further capital on machinery in the power house, and recommended that, with certain modifications, the existing agreement with the company be extended to October 28th, 1918. Under the modified agreement the price to be charged for energy for lighting purposes, from April 1st, 1910, is to be reduced to 2d. per unit up to 200,000 units per annum; if the quantity exceed 200,000 units, but does not exceed 250,000 units, 1¾d. per unit, and when the energy supplied exceeds 250,000 units, 1½d. per unit; the B.T.-H. Co. to maintain a supply of energy up to a maximum of 410 kw., which, combined with the output from the Council's own machines, places at the disposal of the Council energy aggregating 610 kw. The Committee's report was adopted.

Surbiton.—The U.D.C. has received from the L.G.B. sanction to a loan of £615 for house services, and £615 for meters.

Swindon.—The T.C. has decided to defer for a year the report of the town clerk as to the powers of the Council to lease or sell the tramway and electricity undertakings.

Watford.—The U.D.C. has received the consent of the North Metropolitan Electric Power Supply Co., for the supply of energy by the Council to places near the town for which the company has an order.

Worcester.—The electrical contractors of the city have written to the T.C. protesting against the proposal in a report of the Electricity Committee to engage in municipal trading. When the matter came before the Council, several members opposed the proposal, and replying for the Committee, Mr. Parker said the

Council had, in the past, practically decided that the Committee should not be allowed to do municipal trading, and members could be quite sure that it would not give the electrical engineer permission to do anything of the kind unless it got the sanction of the Council.

Worksop.—At the last meeting of the U.D.C. the clerk gave a brief summary of the finances in connection with the electricity undertaking. He said the expenditure had been £2,330 and the revenue £4,865, including the Council's own contribution for street lighting. The repayment of loan and interest absorbed £1,959, which, with £2,330 expenditure on general account, made a total of £4,289, leaving a balance to the good on the year's trading of £576. Nothing was put down for depreciation, because of the short period allowed for the repayment of the loan, which would run out in 15 years, and the machinery should last longer than that.

TRAMWAY and RAILWAY NOTES.

Keighley.—The T.C. has decided to apply to the B. of T. for an extension of time until September, 1911, and September, 1912, for the completion of the tramways in the borough.

London.—L.C.C.—A report of the Highways Committee, which was presented at the meeting of the Council on Tuesday, contains the following summary of the estimated results of the working of the L.C.C. tramways for 1910-11:—

Surplus on working of electric lines	£934,180
Deficiency on horse lines..	22,170
Net surplus on working	£912,010
Interest, rents, &c.	27,238
Total..	£939,248
Charges against working surplus—Debt charges, £662,266; income-tax and sundry items, £32,845	695,111
Net surplus..	£244,132

The estimates provide for the appropriation of this net surplus in the following manner:—Renewals fund, £125,989; general reserve fund, £118,143. It is remarked that when the total capital outlay of £13,500,000 is borne in mind, the surplus cannot be regarded as large. At the same time, it is felt that the position of the enterprise is, on the whole, satisfactory.

The residents of Southfields, which claims a population of some 72,000, are endeavouring to obtain an extension of the L.C.C. tramways from Wandsworth to the county boundary *via* Merton Road. The Wandsworth B.C. is being asked to give its support.

The L.C.C. is understood to be seeking Parliamentary powers for five tramway routes within the Hampstead Borough. Three of these were proposed last year, viz., Cricklewood to Marble Arch, Child's Hill to Chalk Farm, and Maida Vale to Upper Avenue Road. Two additional lines proposed are from Marylebone Road to Swiss Cottage, and from Hampstead Heath station to Rosslyn Hill. The matter has been before the local B.C.; the local Residents' Opposition Committee is to be revived.

Lowestoft.—The general manager of the tramways has been directed to prepare a report on the trackless trolley system in connection with the Kessingland light railway.

Malvern.—The U.D.C., on June 5th, discussed the question of the proposed funicular railway on the Malvern Hills, and decided to dissent from the application for a light railway order with a view to mature consideration of the scheme, and to enable it, if necessary, to appear at the local inquiry. At the same time the Council is not opposed to the general principle of the scheme.

Manchester.—The conductors and drivers in the employ of the Manchester Corporation at a meeting on Sunday further discussed the proposal for a reduction of working hours from nine to eight. The request was recently made that the Tramways Committee should hear a deputation from the men, but this was not entertained, on the ground that the Committee could not consider the request in view of a decision of the City Council that the consideration of an eight hours' day for all Corporation employés was inopportune. On the recommendation of the Tramway Workers' Association's Executive, the men on Sunday decided to defer their application for a time, and in the meantime through the labour members in the City Council to move for the rescinding of the resolution of the authority when the six months required by the standing orders of the Council had expired.

Morecambe.—At the meeting of the T.C. on Monday, Alderman Brown, chairman of the Tramways, submitted the balance-sheet covering the 17 months' working of the tramways since they had been taken over by the Corporation. The income amounted to £6,643, and the expenditure to £5,205, leaving a net profit, after paying interest and placing £516 to the sinking fund, of £67. He considered the result was highly satisfactory, and he anticipated an increase each year. Certain expenses occurred which would not occur again, and he had every confidence that the tramways would be an excellent paying concern, and would justify the step the Corporation took in purchasing the undertaking.

Nantwich.—The R.D.C. has decided to dissent from the light railway scheme in the district for which an order is being applied for to the Light Railway Commissioners, in order to protect public interests.

Nelson.—At a T.C. meeting on June 16th, the town clerk submitted correspondence with Burnley Corporation respecting the supply of electricity for tramways with Nelson. It was decided that the offer of 2d. per unit for electricity supplied to Brierfield tramways be accepted, and that the borough treasurer inspect the books and accounts of Burnley tramways.

Paignton.—At the U.D.C. meeting on Monday the question of the extension of the tramway from Torquay to Paignton was mentioned. It had been felt that the work was delayed, and on the instruction of the Roads Committee, the clerk had written to the engineer of the National Electric Construction Co., Ltd., asking him at once to proceed with the laying of the track. The Clerk announced that the company had intimated that it could not give a date until Torquay agreed to a system.

Plymouth.—The seventeenth annual report of the manager of the Corporation Tramways states that during the 12 months the cars travelled 795,636 miles, against 792,138 in the previous year. The consumption of energy amounted to 1,191,930 units, as against 1,136,888 units, and the mileage per car per annum was 30,524, compared with 30,466. The number of passengers carried totalled 8,063,810, made up of 685,650 1½d. fares, 7,129,404 1d. fares, and 248,756 ½d. fares. The growth of the undertaking year by year from its inception in 1894 is shown in tabular form. The receipts amounted to £36,638. Of last year's total revenue, permanent way repairs absorbed £1,141, renewals £2,473, and all other working expenses £22,897, leaving a gross profit of £10,127. Against that sum there is charged £4,781 interest, £4,496 contribution to sinking fund, and £850 net profit in aid of rates.

Pontypridd.—The employés of the local tramways threaten to strike because three of them have been summarily dismissed by the manager. The men claim the right to appeal to the District Council, but the Electricity Committee denies them that right.

Wolverhampton.—The abstract of the accounts of the Corporation tramways undertaking for the year ended March 31st shows that the gross profit for the year on electric traction account was £17,915, which has been disposed of in the following manner:—Interest on capital (less interest received), £7,362; income-tax on profits, £185; repayment of loans, £4,701. Of the balance of profit, £667 goes to loss on omnibus account, £109 towards cost of waiting room, and renewals and reserve receive £3,855 and £1,037 respectively. The sum of £32,395 now stands to the credit of the reserve and renewals fund. Consequent upon the opening for traffic of the Penn Fields section on September 10th last, the total passenger traffic receipts show an increase of £2,717 for the year, but the receipts on the routes comparable with the previous year show a decrease of £265, notwithstanding the fact that there have been two Easter holidays in the year. The total costs per car-mile were 6·423d., an increase of ·049d. per car-mile, mainly due to extra repairs in connection with the permanent way and the Lorain equipment.

The Committee considered that the time had arrived when a permanent engineer should be appointed to devote the whole of his time to the tramway undertaking. It, therefore, decided that Mr. Shawfield, who had hitherto been responsible, should be retained as consulting engineer, and that an annual sum of £52 10s. should be contributed by the Tramways Committee to the Electricity Committee in respect thereof; and that Mr. H. Vickers, who had been doing the tramway inquiry work under the supervision of Mr. Shawfield, should be appointed tramway engineer and chief assistant to the general manager at a salary of £200 per annum.

TELEGRAPH and TELEPHONE NOTES.

American Wireless Scandal.—As we briefly indicated in our last issue at the moment of going to press, energetic steps have been taken by the U.S. Post Office Inspectors in connection with an alleged gigantic scheme to defraud investors. The offices of the United Wireless Telegraph Co. were raided, and everything portable was seized; the president and first vice-president of the company were arrested, but were afterwards released on heavy bail. The Chief Inspector, Mr. Mayer, stated that the United Wireless Telegraph Co. was an outgrowth of the Amalgamated Wireless Securities Co., organised in December, 1904; the name was changed in 1906, and the capitalisation was increased from one million shares at £2 each to two millions at the same par value. The American De Forest Wireless Telegraph Co. was then sinking into bankruptcy, but the staff, it is stated, were selling their stock at a premium, and pretending that the company was prosperous; the United Co. professed to have for its sole object the combination of all the wireless companies, including the Marconi company, and Mr. Mayer charged the United Co. with circulating fraudulent statements, the stock being alleged to be worth £20,000,000, whereas the real assets of the company were only worth £80,000. One of the officers was believed to have

made from one to two millions sterling, and others of lesser degree in proportion. There were 28,000 stockholders, many of whom had paid £10 a share. "Colonel" Wilson was the largest individual stockholder in the De Forest Wireless Co., as well as the United Wireless Co.

Bolivia.—In the Bolivian Budget for 1910 appear (*inter alia*) the following items of expenditure:—£6,675 for the construction of new telegraph lines, and £3,750 for the reconstruction of existing telegraph lines and the purchase of conductors. A copy of the Budget, containing further particulars, may be seen by British firms at the Commercial Intelligence Branch of the Board of Trade.—*Board of Trade Journal.*

New System of Telegraphy.—A report has come to hand relating to a new system of telegraphy, applicable to submarine cables and to wireless telegraphy, invented by Mr. Hans Knudsen; it is stated that the invention quadruples the speed of transmission, that the Morse code is dispensed with, and that transmission is effected with the aid of a keyboard, the message being received on a type-writing machine. It is also alleged that it is impossible to tap the messages. No particulars of this remarkable invention are given, and we are disposed to attach no importance to the claims put forward.

Submarine Signals.—In view of the recent wreck of the *Pluviose*, it is interesting to note that, according to the *Times*, submarine signal receivers are being fitted into the submarine vessels of the great Navies, which enable the commander, when approaching the surface, to detect the presence of a steamer in the vicinity. With the aid of these, together with signalling bells, the submarine vessels can also communicate with each other, and can give warning of their approach to the surface, as it is stated that the bell, which is already provided in the United States Navy, can readily be heard without the use of special receivers by vessels at the surface. It is proposed also to equip submarines with telephone buoys, which can be detached at will and allowed to rise to the surface while the vessel is submerged.

Telephone Facilities.—Replying recently to a question in Parliament as to whether he would arrange that post offices which had telephone wires might be used as call offices, the Postmaster-General stated that the telegraph lines at the offices mentioned had been fitted with telephones for the purpose of sending forward telegrams to the local transmitting centres, but they were not suitable for use for general telephonic exchange communication. He promised to inquire as to what facilities could be afforded.

Telewriter Exchange.—On July 1st the first telewriter exchange in the City of London will be opened by the Lord Mayor, with 40 subscribers. The exchange is connected with the Central Telegraph Office, and arrangements are being made with the cable companies for connections with their offices. An exchange will also be opened in the West-End at an early date.

CONTRACTS OPEN and CLOSED.

OPEN.

Australia.—July 1st. 36,000 incandescent lamps for the City Council. See "Official Notices" June 10th.

July 27th. Pneumatic tube service for the P.M.G.'s Department at Adelaide. See "Official Notices" June 17th.

August 2nd. 1,820 private letter-box fronts for the P.M.G.'s Department in Victoria, Queensland, South Australia and Western Australia. See "Official Notices" June 17th.

New South Wales.—One electrically-driven dust extractor, for the P.M.G.'s Department. See "Official Notices" to-day.

S. Australia.—July 6th. Cordless switchboards for the P.M.G.'s Department in South Australia. See "Official Notices" May 20th.

Victoria.—July 19th. 4,200 Commonwealth telephone sets, for the P.M.G.'s Department in Victoria. See "Official Notices" May 27th.

Batley.—June 28th. Battery of accumulators, automatic reversible traction booster, and one battery charging booster, for the Corporation. See "Official Notices" June 10th.

Belgium.—July 2nd. The municipal authorities of Bisseghem (Flandre Occidentale) are inviting tenders for the establishment of a central electric lighting station in the town.

July 27th. La Société Nationale des Chemins de Fer Vicinaux, of Brussels (14, Rue de la Science), is inviting tenders for the electrical equipment of a transformer sub-station for converting to continuous current for traction purposes on the local railways in the Bruges district. Specification, 1 fr.

Birmingham.—June 30th. General and engineering stores for the Corporation electric supply department.

Carlisle.—June 27th. Cast-iron piping and steel steam piping, for the City Electricity Department. See "Official Notices" June 17th.

Crompton.—June 30th. Dynamos and electrical equipment for lighting new and present buildings at the sewage works, with motors for driving machinery, standards, wiring, lamps, &c., complete, for the U.D.C. J. P. Wilkinson & Son, Civil Engineers, 30, Cathedral Street, Manchester. (Returnable deposit of £5 5s.)

Doncaster.—June 30th. Coal, for a year, for the Electricity Committee of the T.C.; General Manager, Electricity Works, Grey Friars Street.

Exminster.—June 30th. Electrical appliances, for a year, to the Devon County Lunatic Asylum; H. E. Morgan, clerk.

Hornsey.—July 9th. Electric light installation at the Stroud Green School, for the T.C. See "Official Notices" to-day.

Lancaster.—Tenders are invited by the Lancaster County Asylum Visiting Committee for electrical goods for 12 months ending July 3rd, 1911.

Llandaff and Dinas Powis.—July 4th. Extra-high-tension switchgear, transformers, distribution switchboard and fittings, and mains, boxes, &c., in connection with Whitchurch electric lighting, for the R.D.C. See "Official Notices" to-day.

London.—L.C.C.—July 5th. 250 car bodies, 250 sets of centre bearing swing bolster trucks, and 250 overhead and trolley equipments. See "Official Notices" June 10th.

July 6th. Wiring and fittings for electric lighting of the St. Mark's Road and Haverstock Hill Schools. See "Official Notices" to-day.

Lowestoft.—June 28th. 5,000 tons of slack and large steam coal for the Electricity Works. Deposit 10s. 6d. Town Clerk.

Manchester.—June 28th. Pitch for paving purposes, for the Tramways Committee. Mr. J. M. McElroy, manager.

Newport (Mon.).—June 27th. Low-tension, high-tension and extra-high-tension switchboards, for the Electricity Committee. See "Official Notices" June 10th.

July 8th. Wooden water-cooling tower, for the Borough Electricity Department. See "Official Notices" to-day.

Norway.—June 29th. The Hamar Electric Works invite tenders for the supply of oil transformers, cable, 6 tons of copper wire, dynamos, &c. Tenders to "Driftsbestyrerens Kontor, Hamar Electricitetsverk," Hamar. A copy of the conditions and specifications (in Norwegian) at the Commercial Intelligence Branch of the Board of Trade, 73, Basinghall Street, London, E.C.

Radcliffe.—The U.D.C. has decided to invite tenders for installing the electric light at the new Council Offices.

Rawtenstall.—July 1st. Tramway permanent way construction, steel poles, overhead equipment, cables, conduits, trenching, section boxes and accessories, for the Corporation. See "Official Notices" June 10th.

Rotherham.—July 9th. Cable and electricity meters, for the Corporation Electricity Department. See two "Official Notices" to-day.

Salford.—July 18th. Bore-hole pumping plant for the Corporation Electricity Works. See "Official Notices" to-day.

Shanghai.—July 5th. Two 940-K.V.A. two to three-phase step-up transformers, E.H.T. switchgear and E.H.T. underground mains and feeder pillars, for the Municipal Council. See "Official Notices" June 17th.

Spain.—The municipal authorities of Mora (province of Toledo) have just invited tenders for the concession for the electric lighting of the town during a period of 10 years.

Swansea.—June 27th. Twelve months' supply and delivery of motors and starting switches for the Corporation. See "Official Notices" June 3rd.

Tunbridge Wells.—July 9th. High and low-tension paper-insulated cables, for the Corporation. See "Official Notices" to-day.

Turkey.—October 28th. H.M. Consul at Constantinople (Mr. A. T. Waugh) reports that tenders are invited by the Turkish Ministry of Commerce and Public Works for a concession for the construction and working of electric tramways in the city of Constantinople and its suburbs. For further particulars see this column for June 3rd.

Wallsend-on-Tyne.—Tenders are invited for an electrical installation for the lighting of a skating rink. Plans and particulars from Messrs. Simpson & Lawson, architects, Emerson Chambers, Newcastle-on-Tyne.

CLOSED.

Altrincham.—The Education Committee has accepted the tender of Messrs. Veritys for electric light fittings.

Auckland.—The Board of Guardians has accepted the tender of the Electric Motor Co., of Newcastle-on-Tyne, for installing the E.L. at the new infirmary, at £113.

Australia.—Launceston (Tas.).—According to an Australian exchange, Messrs. Hadfields, Ltd., have received from their Launceston agent, Mr. J. J. Horrocks, the contract from the City Council for the supply of points and crossings and for special work in connection with the tramway installation, at £2,300.

The *Australian Mining and Engineering Review* says that the City Council has accepted the tender of Messrs. J. & T. Gunn, Ltd., at £6,598, for car bodies for the electric tramways now under construction. Deliveries are to be made as follows:—Three in six months, three in seven months, three in eight months, and five in nine months.

An Australian contemporary reports the placing of the following contracts by the Prahran-Malvern Tramway Trust (V.):—

Machine tools, &c.—Thos. M'Pherson & Sons, £653; Noyes Bros. Pty., Ltd., £274; Mr. F. A. M'Carty, £228.

Special crossing at intersection of electric and cable tramways, High Street and Chapel Street, Prahran.—Johns & Waygood, Ltd., £228.

Our contemporary further states that the Colonial Sugar Refining Co. has ordered two electric cranes (which are being manufactured by the Appleby Crane and Transporter Co., Ltd.), each of two tons capacity, and fitted with travelling, slewing, and derricking gear, to be installed at the Little Dock, Melbourne; power will be obtained from the City Council's mains. The cranes will be the first of their type installed on the Melbourne wharves.

Bedford.—The T.C. has accepted the tender of Mr. C. Franklin, for about 4,000 tons of Cotes Park coal for the E.L. works, at 11s. 1d. per ton, and about 500 tons of Wharf made small coal, at 8s. 3d. per ton; and that of Mr. J. E. Page, for about 3,000 tons of Manners Kilburn fine coal, at 8s. 8d. per ton, and about 500 tons of Manners Kilburn nutty slack, at 10s. 11d. per ton.

Birkby.—The tender of Messrs. John Marsden & Son, of Huddersfield, has been accepted for the E.L. installation at the new elementary schools at Birkby.

Burslem.—The Education Committee has accepted the tender of Messrs. E. M. Evans & Son, for installing the E.L. at the new central schools, at £200.

Bury St. Edmunds.—The T.C. has accepted the tender of the British Westinghouse Electric & Manufacturing Co., Ltd., for a 200-kw. Belliss engine and a Westinghouse dynamo, at £1,083.

Cleckheaton.—The U.D.C. has accepted the tender of the Lancashire Dynamo Co., Ltd., for an automatic reversible booster.

Dundee.—In our "Lighting Notes" last week we stated that the offer of *Mr. Mackenzie* for the electric lighting of the Corporation Baths had been accepted. This was incorrect; Messrs. J. Mackersie & Co., of 8 and 10, Bank Street, Dundee, have secured the contract.

Germany.—The Nagel und Kemp Eisenwerk Gesellschaft, of Hamburg, has secured the contract for the construction and erection of four electrically-operated cranes at the port of Hamburg.

Government Contracts.—The following tenders have been accepted during the past month by the Government Departments named:—

Admiralty Contract and Purchase Department.

Brackets, lamps, pendants, &c., for electric light fittings.—Evered & Co., Ltd.; Gabriel & Co.; General Electric Co., Ltd.; Hawkers, Ltd.; Sir James Laing & Sons, Ltd.; W. McGeoch & Co., Ltd.; Player & Mitchell; Spagnoletti, Ltd.

Switches, bells and other electrical fittings.—British Insulated and Helsby Cables, Ltd.; Edison & Swan Electric Light Co.; Electric and Ordnance Accessories Co., Ltd.; Evered & Co., Ltd.; Hawkes, Ltd.; India-Rubber, Gutta-Percha, &c., Co.; International Electric Co.; Johnson & Phillips, Ltd.; Kelvin and James White, Ltd.; McGeoch & Co., Ltd.; Player and Mitchell; Reid Bros.; Spagnoletti, Ltd.; Sterling Telephone and Electric Co., Ltd.; Walters' Electrical Manufacturing Co., Ltd.; A. Watson & Co.

War Office.

Electric light fittings.—Credenda Conduits Co.; Edison & Swan United Electric Light Co., Ltd.; General Electric Co., Ltd.; S. Heath & Sons, Ltd.; Kensington Stamping Co., Ltd.; Veritys, Ltd.

Electric cranes.—C. & A. Musker.

General Post Office.

Gell telegraphic apparatus.—Gell Telegraphic Appliances Syndicate, Ltd.

Magneto bells.—British L. M. Ericsson Manufacturing Co., Ltd.

Insulator spindles.—Bullers, Ltd.

Telephones.—Western Electric Co., Ltd.

Bronze wire.—F. Smith & Co., &c., Ltd.

Annealed copper wire.—R. Johnson & Nephew, Ltd.

Flame-proof wire.—London Electric Wire Co. and Smith's, Ltd.

Electric lighting of Edinburgh Head Post Office.—J. Gray & Son.

Electric lighting of Westminster District Post Office, Wimpole Street, W.—A. Maund.

Telephone equipment, private branch exchange lamp-signalling system at Harrod's Stores, Brompton Road, S.W.—Western Electric Co., Ltd.

Hornsey.—The B.C. has accepted the tender of the Alphons Custodis Chimney Construction Co. for a lightning conductor for the chimney shaft at the sanitary depôt, and repairs to the same, at £100.

London.—The Metropolitan Asylums Board has placed an order with W. J. Fryer & Co. to carry out the installation of low-voltage metallic-filament lamps at Tooting Bec Asylum. Estimated cost, £350.

The contract for electric lighting for the new Wesleyan Mission Hall at Tooting has been given to Mr. H. J. Godfrey.

Bermondsey.—The B.C. has accepted the tender of Dinham, Fawcus & Co., Ltd., for 3,800 tons to 4,700 tons of Shipley peas or small nuts for the electricity undertaking, at 13s. 7d. per ton, which is the same price as that paid last year.

Hackney.—The Electricity Committee has accepted the tender of Messrs. W. Cory & Son, Ltd., for 7,000 tons of Cowdenbeath and Edinburgh washed peas, at 11s. 3d. per ton.

Hammersmith.—Messrs. Ferranti having intimated that, through an error in their tender, they quoted £155 instead of £257 for high-tension sub-station switchgear, they have been permitted to withdraw their tender; that of Messrs. Cowans, Ltd., at £217, has been accepted.

Islington.—The B.C. has accepted the tender of the Crown Engineering Co., at £135 10s., for a lathe for the electricity works.

Shoreditch.—Twenty-three tenders were received for Scotch washed peas, and that of Messrs. John Hudson & Co., for a year's supply, at 11s. 6d. per ton, has been accepted.

St. Pancras.—The B.C. has accepted the tender of Messrs. J. H. Beattie & Co. for the supply to the electricity undertaking of from 14,000 to 16,000 tons of Mansfield nutty slack, at 12s. 1d. per ton, delivered to the King's Road Station; 2,000 tons of Hucknall small nuts, at 13s. 11d. per ton, delivered at the King's Road Station; and from 6,000 to 7,000 tons of Shirebrook best small nuts, at 13s. 11d. per ton, delivered at the Regent's Park Station, or at 13s. 7d. per ton delivered at the King's Road Station. Messrs. Bradbury, Son & Co. will supply 500 tons of Bwllfa Welsh coal in bulk to the Regent's Park Station, at 22s. 4d. per ton.

Newport (Mon.).—The following firms tendered for motor-generator plant for the B.C. Electrical Department, the contract being awarded to the General Electric Co., Ltd., the lowest tenderer:—

British Thomson-Houston Co., Ltd.	Lahmeyer Electrical Co., Ltd.
Dick, Kerr & Co., Ltd.	Crompton & Co., Ltd.
Johnson & Phillips, Ltd.	Siemens Bros. & Co., Ltd.
British Westinghouse Electric and Mfg. Co., Ltd.	Electric Construction Co., Ltd.
Brush Electrical Eng. Co., Ltd.	Lancashire Dynamo Co., Ltd.
	Bruce Peebles & Co., Ltd

Norwich.—The T.C. has accepted the tender of Messrs. Willans & Robinson, Ltd., for a turbo-generator, condenser and oil separator, at £3,758.

West Ham.—The Education Committee has accepted the tender of Messrs. Pritchetts & Gold, at £75, for renewing the plates of the main storage battery at the Technical Institute.

FORTHCOMING EVENTS.

Junior Institution of Engineers.—Saturday, June 25th. At 10.15 a.m. Visit to the works of the Thames Ironworks, Shipbuilding and Engineering Co., Canning Town, E.

Physical Society.—Friday, June 24th. Afternoon visit to the National Physical Laboratory.

NOTES.

The Institution of Electrical Engineers.—During the past week the offices of the Institution have been removed to the new headquarters on the Victoria Embankment, and yesterday the formal change of address took place. We offer our hearty congratulations to Mr. Rowell and his staff upon their house-warming, and to the Institution as a whole upon the consummation of its long-cherished ambition—to have a home of its own, worthy of its importance and standing in the engineering world. We trust that the new era in its career which has now commenced may be even more brilliantly successful than its remarkable development in the past, and that associations may grow up around the Institution's home which will endear it to the members and constantly increase its usefulness.

Dirigible Balloons.—According to the daily Press, secret experiments have been carried on during the past two years at Dagenham Dock, in connection with the control of submarines and dirigible balloons by Hertzian waves, by Mr. A. G. Roberts, formerly chief electrician to the Perth Electric Tramways (W. Australia), Mr. F. J. Healey, and Mr. C. A. Moreing. It is stated that some £30,000 has been expended on the work. On Friday last a demonstration was given with a balloon 110 ft. long and 20 ft. in diameter; from the published account, it appears that the balloon was stationary, the demonstration being confined to the control of the elevating planes and rudder by electric waves. A submersible torpedo similarly controlled was shown, but was not operated; a motor launch carrying passengers, however, was manœuvred on the Dagenham lake under wireless control. An aeroplane with automatic stability secured by means of a gyroscope was also exhibited. We gather that the demonstration indicated rather what the inventor proposed to do than what he had actually accomplished, and it seems to us that it would have been better to wait until success had been attained than to show these immature devices.

Institution and Lecture Notes.—Association of Teachers in Technical Institutions.—On Saturday last the adjourned annual conference of the Association was held at Birmingham; the presidential address of Mr. J. W. Wilson, M.Sc., was read, dealing with the organisation of technical education in this country and abroad, and various reforms that were urgently needed. Dr. T. Slater Price read a paper on the relation between the technical school and the University, referring particularly to the evening classes conducted by the former.

Iron and Steel Institute.—The autumn meeting will be held at Buxton from September 26th to 30th. A printed circular giving the necessary particulars can be obtained from the secretary, Mr. G. C. Lloyd. There will be papers read and discussed, and a number of interesting excursions to colliery, iron and steel works, the L. and N.W., Crewe Works, and Manchester University. The Duke of Devonshire invites members to a garden party at Chatsworth.

Devonport Dockyard Electrical Fitters' Association.—The annual meeting of the above was held at headquarters on June 2nd, when a *résumé* of the past season was given, and in addition to a satisfactory statement financially, the programme of lectures was referred to. The latter were much appreciated by the members, who attended in large numbers with their friends; they included lectures by Mr. Z. H. Kingdon (chief electrical engineer, Devonport Dockyard) on "Electrical Transmission of Power"; by Mr. P. J. Watts (assistant electrical engineer, Devonport Dockyard) on "Water Treatment," more particularly in its relation to boiler uses; by Dr. G. B. Bryan, on "Applied Electricity," with experimental demonstration at the Royal Naval Engineering College, Devonport; by Mr. E. E. Benham (assistant electrical engineer, Devonport Dockyard) on "Electrical Developments on the N.E. Coast"; by Mr. W. Beard (E.E.'s Department) on "Commutation," and by Mr. A. Vickery, of the same department, on "The Evolution of the Submersible Torpedo Boat," the lecturer showing how electricity had made possible, by power and lighting, the navigation of this class of boat at the present time. Mr. J. C. Wildman (Assistant Master, Dockyard Schools) gave an experimental lecture on "Wireless Telegraphy"; a complete wireless installation was fitted up temporarily for the purpose, and messages were transmitted and received. By permission of the Admiral-Superintendent, the Dockyard School was allowed to be used for the lecture, a courtesy which was greatly appreciated. The last lecture of the season was given by Mr. W. Wotten (Inspector of Electrical Engineers' Department) on "Ship Installation," illustrated by lantern slides, and giving an account of present methods in both naval and mercantile ships of applying electricity to its varied uses. A similar course of lectures is in preparation by the Committee for season 1910-11, commencing about October.

Institution of Civil Engineers.—On Wednesday the eighteenth "James Forrest" lecture was delivered by Sir John Gavey, who dealt with Recent Developments in Telegraphy and Telephony. A report of the lecture will appear in an early issue.

Electrical Fatalities.—According to a Cardiff paper, William Brown (25), electrician, employed at the West Elliot Pit, New Tredegar, was killed on the morning of 17th inst. whilst working underground. Dr. Martin and an electrician named Wilcox tried artificial respiration, but in vain. Brown had descended the pit only 10 minutes before his death. He came in contact with a switch, and received a shock at 3,000 volts. Deceased was formerly of South Shields.

On Saturday last a pit checkweighman named Mowatt climbed on the roof of the Clyde Valley Electric Power Co.'s sub-station in Hamilton Road, Motherwell, and recovered a football for a boy. Seeing a second ball there, Mowatt tried to reach it, but he came into contact with a live wire and was instantaneously killed, his body and clothing being burned.

Tramway Accident Claim.—At the Leicester Assizes, last week, £175 damages was awarded to a farmer named Harrison, against the Leicester Corporation, in respect of a claim following an accident due to an electric car driver clanging his gong and frightening plaintiff's horse.

Tramway Workers' Organisation.—The Tramway and Vehicle Workers' Association will celebrate its coming of age at the annual conference which will commence in Manchester on August 10th. Provision is being made by the Salford municipality for the entertainment of the delegates, as the headquarters of the Association are at Leaf Square, Salford. Councillor G. T. Jackson is the general secretary.

Will.—The late Mr. H. A. Hoy (general manager of Beyer, Peacock & Co., Ltd.), of Fallowfield, Manchester, left, according to the *Times*, £23,251 gross, and £22,795 net personalty.

Western Australia.—On the 17th ult. the control of the Bunbury Electric Light and Power Supply passed from the hands of the company to those of the Bunbury Municipal Council, the purchase price being £7,348. The settlement was arrived at by direct negotiation without arbitration. The occasion was celebrated by a reception at the Council Chambers, presided over by the Mayor, and a luncheon given by Mr. Wall, of Messrs. Splatt, Wall & Co., the owners and founders of the undertaking. In the course of a speech, Mr. Wall expressed his regret at parting with the concern, which was started seven years ago, and had paid 10 per cent. to the shareholders during the past five or six years. The proceedings were marked by the utmost cordiality on both sides.

Proposed Exhibition in Paris.—According to a Reuter dispatch from Paris, it is proposed to hold a Universal Exhibition in Paris in 1920. The commercial and industrial group in the Senate have adopted the idea, and are conferring with the Government on the subject.

Electric Steel.—According to a report by H.M. Consul-General at Chicago (Mr. H. D. Nugent) on the trade of that district in 1909, which will shortly be issued, during the year, the Illinois Steel Co., at South Chicago, Illinois, installed the first Heroult electric furnace of large capacity that has been built in the United States. This furnace has been producing electrically refined steel at the rate of about 3,000 tons per month. The hot metal is taken from the Bessemer converter and refined in the furnace to reduce the percentage of phosphorus, sulphur and other impurities. Experimental lots of rails made under this process have been supplied to some of the Western railways, and, so far as can be seen at present, they are likely to prove a success, as they show remarkable ability to resist hard usage.—*Board of Trade Journal.*

Electricity from the Sun's Rays.—It is reported from America that upwards of a million dollars' worth of stock in the Sun Electric Generator Co. has been sold to the public. The promoters claim that they possess machines which will attract and store electric fluid drawn from the sun's rays.

OUR PERSONAL COLUMN.

The Editors invite electrical engineers, whether connected with the technical or the commercial side of the profession and industry, also electric tramway and railway officials, to keep readers of the Electrical Review *posted as to their movements.*

Central Station Officials.—The Bexhill E.L. Committee has increased the salary of Mr. A. C. Ticehurst, shift engineer, to £125 per annum.

The members of the staff of the Wednesbury Corporation Electricity Works, on Saturday bade farewell to Mr. George Garratt, junior shift engineer, who has obtained another appointment in the Newcastle district, after 2½ years at Wednesbury. A presentation was made on behalf of the staff by the borough electrical engineer (Mr. W. Fennell), the gifts consisting of a calculating slide-rule, a calabash pipe and a tobacco pouch.

There are four electricity undertakings in the county borough of Stoke-on-Trent, which has recently come into existence, and which is formed by the federation of the six Pottery towns. In considering the question of the appointment of a chief electrical engineer, the Council decided that this official should be chosen from the engineers in charge of the existing undertakings in the borough. The Electricity Committee has now met and considered the applications for this important post. The applicants were: Mr. C. H. Yeaman (Hanley), Mr. Ashton Bremner (Burslem), Mr. P. J. S. Tiddeman (Stoke), and Mr. Cuthbertson (Longton). The voting by ballot resulted in the selection of Mr. C. H. Yeaman, and he will be recommended to the Council for appointment.

The Keighley T.C. has appointed Mr. Harry Webber, assistant electrical engineer, Sunderland, as borough electrical engineer, at a salary of £250 per annum. There were 127 applicants.

The Worcester T.C. has granted its electrical engineer, Mr. Shaw, an extended leave of absence to visit America, at his own expense, to study water-power systems.

Mr. S. G. Payne, chief assistant to the Burv (Lancs.) Borough Electrical Engineer, met with an accident on June 14th. Whilst testing some new switchgear he received a shock, and had his right hand and arm badly burnt, while his eyebrows and moustache were singed off.

On the occasion of his marriage, Mr. A. Walker, electrical engineer at Kettering, has been presented by the staff and employés with a barometer.

Mr. Geo. W. Richardson, late of the Madras Electric Supply Corporation, Ltd., has recently been appointed power-house superintendent on the River Jhelum hydro-electric power scheme under the Kashmir State Public Works Department, India, at a salary of Rs.6,000 to Rs.8,400 per annum.

According to a Glasgow paper, the Greenock Electricity Committee, learning that there was a likelihood of Mr. J. A. Robertson, the burgh electrical engineer, receiving an appointment at Salford, last week recommended that his salary be increased by £50. The Council has approved the recommendation.

Mr. J. Hayward Home has resigned the post of engineer and manager to the Urban Electric Supply Co., Ltd., at Berwick-upon-Tweed, which he has held since the undertaking was started in 1903, in order to take up the position of managing directorship of the Kenyon Ironworks Co., Manchester.

General.—According to the *Times*, when Mr. Eames, the Controller of the Central Telegraph Office, retires at the end of this month, he will be succeeded by Mr. John Newlands, the present Deputy-Controller. Mr. Eames entered the service of the Electric and International Telegraph Co. in 1858, and went over to the Post Office on the transfer in 1870, rising to the post of Controller in 1905. His successor, Mr. J. Newlands, passing through all ranks of the service, was appointed Controller at Edinburgh in 1898; four years later he became traffic manager of telegraphs,

and acquired a unique experience and wide knowledge, which, combined with his administrative ability, led to his appointment as Deputy Controller in 1905. Two years later he went to India and reorganised the traffic arrangements throughout India, Burma, and Ceylon, introducing important reforms which have had most beneficial effects. For these services he was made a C.I.E. We congratulate Mr. Newlands on his attainment of the post of Controller, which we hope he may long retain.

Mr. R. F. Easson, superintendent of the Commercial News and Press Department of the Great North Western Telegraph Co., Toronto, Canada, is retiring, at his own request, after 60 years' telegraph service. Mr. Easson, who was born in Fifeshire in 1838, entered the service of the old Montreal Telegraph Co. at Toronto as a messenger and office boy in 1849. He will make a tour of Scotland during the present year.

Obituary.—Mr. Charles Trippe.—We regret to learn of the death, which took place at New York on June 16th, of Mr. Charles Trippe, the superintendent there of the Anglo-American Telegraph Co., Ltd. The deceased gentleman was born in 1843, and joined the telegraph service somewhere about 1860. In 1865, as a telegraphist, he joined the expedition which, on board the *Great Eastern*, made the second attempt to lay the Atlantic cable, which attempt failed after some 1,200 miles were paid out. Mr. Trippe returned to England, and subsequently joined the next expedition in the following year, when the cable was successfully landed and worked from Heart's Content, Newfoundland. From this time (1866) his record is one of continuous service with the original company, as he remained at the Newfoundland stations, Heart's Content and St. Pierre, until 1894, when he was made superintendent of the Anglo-American Co. at New York, which position he held until his death last week. Mr. Trippe was, therefore, not only actively connected with the Atlantic telegraph from its commencement, but for 45 years he did not break his connection with the original company, now the Anglo-American Telegraph Co. Mr. Trippe was last in this country a couple of years ago. He leaves a host of friends in the telegraph world who will be deeply grieved to hear of his death.

Alderman Travis.—The death occurred, at his residence, Ash Street, Southport, on Monday evening, of Alderman G. F. Travis, aged 52. He had been a member of the Corporation for 20 years, and had been chairman of the Electricity and Tramways Committee, upon which his engineering knowledge was of great value. He took a prominent part in the inauguration of the Southport Electric Tramways.

CITY NOTES.

B.E.T. Report and Accounts.

The report and accounts of the B.E.T. for the year ended March 31st, 1909, are not likely to be pleasantly digested by the shareholders, particularly by those who some years ago paid fabulous prices for their holdings, and the time would appear to be fast approaching when some reorganisation of the company's capital will be inevitable unless increased dividend or interest-paying ventures are discovered for the employment of its activities. The company is feeling evidently the cold blast of the absence of promotion profits.

The profit and loss account shows a profit of some £130,000 for the year, which, by the sum brought forward, is increased to £150,767. The interest on the debenture stocks absorbs £97,000, a dividend of 3s. per share is paid on the preference shares, which disposes of £24,215, £15,000 is transferred to reserve, and the balance of £14,067 is carried forward to the next account. The dividend on the preference shares is thus in arrear from July 1st, 1908, and, as usual, the ordinaries are in a state of decay.

The directors have demonstrated their faith in the value of the subsidiaries by apparently selling some of the paper which the B.E.T. holds in them, the profit on which is carried to the credit of the reserve, which is simultaneously reduced by a somewhat similar sum arising in respect of losses upon investments in companies which have been liquidated. It may seem somewhat strange that there should be investors who, in such circumstances, are willing to relieve the B.E.T. of its paper. Perhaps the only redeeming financial operation in the accounts is the decision to transfer profits on investments to the reserve, for the present at any rate.

No doubt shareholders will desire to have a statement in detail giving particulars of the investments in the sale of which a profit or a loss has been made.

The amount of cash at bank is unusually emphasised in the Report lest, *inter alia*, the shareholders should fail to realise one of the financial resources of the company. The value of an investment in the B.E.T. is well illustrated by the purchase that has taken place by the company of some of its debenture stocks. It redeemed £3,000 of the 5 per cent. perpetual and £53,206 of the 4½ per cent. variety at a discount between nominal and purchase prices of some £16,000.

The investments show a gratifying improved return collectively, but there are almost 1¾ millions in investments which did not yield anything during the financial year.

Every effort, we are told in the Report, has been made to increase the profits of the tramway undertakings—special mention being made of the so-called "fair" fare system, which, naturally enough, has not been welcomed with open arms by the British public. Allusion is made to the unsatisfactory state of the electrical manufacturing industry and to the losses of the Brush, a subsidiary of the B.E.T. It may be noted that the British Electrical Federation—a non-trading or non-profit concern—pays the B.E.T. £300 a year for the use of the furniture, the former apparently obtaining this sum from the subsidiaries. The B.E.T. has arranged to grant a lease of the B.E.T. building for the period of 21 years to the "Federation," the rent for which we suppose is in turn obtained by the latter company from the subsidiaries. As we have pointed out on previous occasions, the total amount due to the company by associated companies and others even at almost half-a-million is much too large, and steps should be taken at once to reduce it. In many cases it may be a question of the difference between paper and cash. If so, and the B.E.T. possess faith in their subsidiaries, why do they not take the paper?

The statement is specially made that to meet depreciation the Associated Companies have made various reserves, which amount to £1,175,997. As, however, we have previously indicated, on referring to the schedule No. 4 of such sum, we find that it is entitled, "amounts set aside by Associated Companies for depreciation and reserve funds, including balances of profit carried forward." There is not much "fund" about the depreciation and the reserves, and the statement seems to be distinctly erroneous in that the sum mentioned is not entirely in respect of depreciation reserves. Assuming, however, that it were so, the total produces a miserable contrast when set alongside the capital expenditure of the various concerns. The City of Birmingham Tramways Co. has opposite its name £517,000; but this is a special case. There would appear to be one or two new investments; £11,000 is invested in the Melbourne Electric Supply Co., Ltd.; a small amount in Edmundson's Electricity Corporation, Ltd.; and in the Shropshire, Worcestershire and Staffordshire Power Co., the company has a controlling interest.

The report states that the company has control of large financial resources which are available for employment. This is the usual tune. As the report states, the cash in hand is large; but that is merely a single factor, and in alluding in that connection to the £200,000 in consols, it should have been mentioned that any realisation of them at the present market price would probably result in a loss of something like £20,000 or £30,000. They would appear to show on the books at £196,373, and at 83 or 84 the loss is evident.

Marconi Wireless Telegraph Co., Ltd.

The directors have just circulated the balance-sheet, together with a profit and loss account for the year ending December 31st, 1909. During the year the company suffered a serious set back by the disastrous fire which destroyed the Glace Bay Station, in Canada, on the eve of its completion. But for this misfortune, a considerable revenue should have been derived from the trans-Atlantic service. No time was lost in the reconstruction of the station and advantage was taken of experience and improvements which it is confidently anticipated will fully compensate in the future for the disappointment and delay. Notwithstanding the serious effect on the revenue occasioned by the fire, the directors are able to report a profit for the year amounting to £11,432. The figures in the balance-sheet and profit and loss account call for no special comment, except as regards the large sum of £144,279 owing by the Canadian Co. Arrangements are being made which should enable the Canadian Co. to repay, at an early date, if not the whole, at least a large proportion, of its indebtedness. Throughout the past year there was experienced a continuously and rapidly increasing demand for wireless telegraphy. A large number of contracts have been accepted by the company, but, not having been completed by the end of the year, no portion of the profits which should be derived therefrom figure in the profit and loss account. A marked improvement in the business done by the associated companies has also been experienced, several of which are now commencing to show profits, and with the ever-increasing appreciation of the Marconi system the directors look with growing confidence to their large shareholding in these companies. The French and Belgian companies have declared dividends for the past year at the rates of 5 and 10 per cent. respectively. The directors recommend the payment of the cumulative 7 per cent. dividend upon the preference shares to June 30th, 1909. The expansion of the company's business during the current year should enable them to make a further announcement in this direction so soon as the accounts for the first six months have been made up. Although this report deals only with the accounts and progress of business to the end

of the year 1909, the directors take this opportunity of officially informing the shareholders that the trans-Atlantic stations have been reopened, and a regular and satisfactory service is being conducted. Other important developments of the company's business are in course of negotiation, which it is hoped may have reached a sufficiently definite stage to enable the chairman to give the shareholders some information at the general meeting. A list of ships fitted with the company's system of wireless telegraphy is annexed to the report showing that there has been a considerable increase since the preceding year. In January last Mr. H. Jameson Davis resigned his directorship. Since the last general meeting Mr. Godfrey C. Isaacs and Mr. Alfonso Marconi have been elected to seats on the board. They offer themselves for re-election.

India-Rubber, Gutta-Percha and Telegraph Works Co., Ltd.

Major Leonard Darwin presided on Tuesday over the half-yearly meeting, held at the offices, 106, Cannon Street, E.C.

The Chairman, in proposing the declaration of a dividend, said that since he addressed them at the last ordinary general meeting in December the board had been through a time of some anxiety on account of the instability of the markets for raw material. He did not wish to refer to the rubber market at any length, as his remarks would run the risk of being misconstrued by the general public. He would limit himself to saying that while they, in common with all who were engaged in the rubber trade, were greatly inconvenienced by the uncertainty of the market, yet they welcomed the development of raw rubber production, because they considered it would eventually be of good service to them. Rubber stood at a high price, gutta-percha was also expensive, cotton had been uncertain, and copper was gradually dwindling in price. With their attention drawn to that unsteadiness, they would not fail to appreciate how much the business preoccupied the minds of the directors and the management. He had to report that the turnover showed a considerable advance over last year. As the turnover he referred to was that of the money received or owing to the company in trading, a certain amount of that increase was due to the advances in selling prices which they had made during the last nine months. They were glad to say that the demand for the Palmer cord motor tire and also for the Persan motor tire was continually generally increasing. They were fairly well employed in the submarine and electrical departments. In view of the increased value of the stocks they had to hold and an increase in the amounts outstanding in their trading accounts, as well as certain extensions, the board thought it desirable to offer for subscription the balance of the preference shares remaining unissued. That led him to explain that the subscribers to this issue, under the terms of it, would not receive any half-yearly dividend at this time; their first half-yearly dividend would not fall due until January 1st, 1911. In conclusion, he moved that a distribution of 5s. per share, less income-tax, to the holders of preference shares numbered 1 to 12,500, be approved and sanctioned; also an interim dividend of 5s. per share, free of income-tax, to the holders of ordinary shares, both payable on July 1st.

Col. A. Weston Jarvis seconded the motion, and the report was adopted.

National Electric Construction Co., Ltd.

The ordinary meeting was held on Friday last at Winchester House, E.C., Mr. L. B. Schlesinger presiding.

The Chairman, in proposing the adoption of the report (see Electrical Review, page 964), said that the depression in the electrical industry last year had been more acute even than in previous years, and finance in connection with it, particularly in this country, had been practically impossible. He was glad to say, however, that the undertakings in which they were substantially interested, were progressing in the right direction, and close attention was being paid to all of them. In the report the directors referred to a contract abroad for which they were negotiating. Negotiations had been in progress for over a twelvemonth, but unfortunately, through no fault of theirs, they were still pending. From the latest information, the prospects of eventually securing the contract were excellent, but they must have a little more patience. With regard to the finance, he might say that all the capital required was underwritten in August last. Owing to the delay, this underwriting had to be cancelled, but he anticipated no difficulty in arranging it again, when the scheme was ready. They were now engaged on the finance of a light railway scheme in England, and the progress made so far, encouraged the feeling that they would be successful in completing it. They had various propositions before them, but as they entailed financial assistance, they had to be careful only to take up those that their friends would underwrite. Passing on to the various companies in which they were interested, in the Rhondda Tramways over £20,000 was earned by the company last year—a very satisfactory result. That enabled a dividend of 6 per cent. to be paid, after putting £3,500 to reserve. They had over £50,000 invested in that undertaking which they hoped to realise at a profit at an early date. The syndicate proposed to make a public issue of debenture and preference shares of the Rhondda Tramways Co. as soon as they could be underwritten on satisfactory terms. In the case of the Musselburgh and District Electric Light and Traction Co., with the extension completed he was glad to say the outlook was decidedly promising. Last year the profit earned was sufficient not only to pay debenture interest, but to put £2,000 to reserve and to pay 2½ per cent. dividend on the preference shares. As, however, a considerable amount of capital expenditure had been incurred in extensions to mains, &c., to cope with the lighting demand, the payment of the dividend was delayed, but it would be paid in the course of a week or two. From the results up to the present, there should be a substantial improvement in the profits for the current year. As to the Mexborough and Swinton Tramways, the overhead system had now been in operation for a complete year, and there was an increase in the receipts of £3,000 and of £3,194 in the profit earned by the undertaking. He was glad to say that a dividend of 2 per cent. had been paid. The receipts for the current year showed an increase over those of the corresponding period of last year. In the case of Torquay Tramways, negotiations were now in progress with the Corporation for the substitution of the overhead for the surface-contact system, and it was hoped that an agreement would be arrived at shortly, failing which there would be an arbitration, and they had nothing to fear from the result, the surface-contact system having been condemned. There was no doubt that, with the system altered and the extension to Paignton completed, the position of the company would be substantially improved. Until the question of system was settled, it was impossible to arrange the finance, but they should be in a position to deal with that very shortly. With regard to the Oxford Tramways, the Bill promoted by the City of Oxford Electric Tramways received Royal assent, and instead of having to put down the surface-contact system, which was provided for in the old Act, the company was now authorised to install the overhead system throughout, with the exception of about a mile and a half in the centre of the town, where the conduit system was to be laid. The horse tramway undertaking was in a prosperous condition and earning a fair dividend on the capital of the syndicate in which their company was interested. In the case of Folkestone, their application to Parliament for powers to substitute conduit and overhead for the contact-surface system was refused. The Committee, before whom the Bill came, only found the preamble proved so far as the extension of time for completion was concerned, and refused to allow the system of traction to be altered. That decision came as a great surprise, not only to them but to their opponents, as they thought they had made out a very strong case. In the course of the next year or two if they could not get the local authorities to consent to their proposals, and they had to go again to Parliament, he believed the powers they sought could hardly be refused. In the case of the Dewsbury and Ossett Tramways, he was glad to say that the revenue was beginning to come up to expectations, and if the progress to date was maintained, a profit, after providing for capital charges, should result from the year's work. The Bo'ness and Carnarvon undertakings continued to make progress, but the revenues had been affected by the general use of the metallic-filament lamp. That, no doubt, would right itself in time, but for the present it meant a set-back in the revenue. The expenses of management during the year had been £5,814, as compared with £6,273 in 1908, and £7,743 in 1907, so it would be seen that the expenses had been reduced wherever possible. The profit on works completed and in progress was only £6,957, as compared with £24,016 a year ago—unfortunately, a very large decrease. That was due to the fact that during the past year there had been practically no tramway construction work in England. The net profit for the year was £1,868, and adding £9,661 brought forward, they had a total of £11,530. They had set aside £5,208 for reserves, depreciation, &c., leaving £6,321 to be carried forward. The past year had been one of great anxiety to the directors and the staff, and the poor results were certainly not due to want of hard work. There had been no work of importance to be obtained in England in their line of business, and while it was some consolation to know that other contractors had felt the pinch as acutely as, if not more so than they had, it did not help their profits. They were convinced that there was profitable work to be secured abroad, and they were devoting their energies to obtaining the contract he had already referred to, and he believed they would succeed. The contract would run into between £300,000 and £400,000, and what was most important, when it was secured they would have better opportunities of extending their foreign connection.

Mr. J. Carr Saunders seconded the motion.

Replying to questions, the Chairman said that the board had voluntarily decided not to draw any more fees until they showed a profit to the shareholders. If they obtained the contract they were now in negotiation about, it would mean a profit of about £20,000. With regard to their investments, it was impossible to say what their market value really was, and the only thing the directors could do was to put them in the balance-sheet at cost.

The report was adopted.

Provincial Tramways Co., Ltd.—An interim dividend of 8d. per share on the £1 ordinary shares is announced.

Melbourne Tramway and Omnibus Co.—A dividend of 4½d. per share for the quarter ending June 30th is announced.

France.—The report of the Compagnie Continentale Edison, of Paris, for the last financial year shows a net profit of £210,541. The output of the company's central stations amounted to 56,715,682 kw.-hours, as compared with 52,422,744 kw.-hours in the preceding 12 months.

Aron Electricity Meter, Ltd.

The directors' report for the year ending March 31st, 1910, states that the profit and loss account, after providing for general charges and depreciation, shows a net profit of £21,118, making, with the balance of £6,549 brought forward, a total available profit of £27,667. Out of this amount the directors distributed in December last a dividend of 3 per cent. on the preference shares, absorbing £3,747, leaving to be disposed of £23,920. The directors recommend the payment of a further 9 per cent. on the preference shares, representing 3 per cent. the remainder of arrears and the full 6 per cent. dividend for the past financial year, amounting altogether to £11,241, and a transfer to reserve towards goodwill and patents of £6,000 (making this reserve £25,000). There remains a balance of £6,680, out of which it is proposed to appropriate £1,326 to pay off the arrears of management commission and directors' fees, held in suspense pending the payment of arrears of preference dividend, and to carry forward to next year £5,354. By the distribution of this year's profits as proposed above, the preference shareholders will have received, apart from their yearly dividend, the residue of the arrears due to them. The board hope that the ordinary shareholders may in the near future participate in the distribution of dividends. The past year's trading has been, in the opinion of the directors, most satisfactory, the sales having exceeded those of any previous year. The increased demand for the company's products has employed the factories to the full. The taximeter business is progressing satisfactorily in England, Belgium and Austria, though it has not yet contributed to the profits of the company. Mr. H. Hirst and Sir James Pender, Bart., offer themselves for re-election as directors.

United Electric Tramways of Monte Video, Ltd.

The sixth ordinary general meeting was held on Wednesday, June 15th, at Winchester House, E.C., Mr. George A. Touche, the chairman, presiding.

In proposing the adoption of the report (see Electrical Review, page 963), the Chairman said that this was the first complete year under electric construction, and the results were up to the estimates and expectations of those who did not expect too much. The mileage of track in operation was now 82, which slightly exceeded the mileage at the close of the previous year, but substantially exceeded the average mileage open during 1908. The crossing under the Central Uruguay Railway and the extension to Colon was opened in September last. A final settlement had been made with the contractors, and he would like to take the opportunity of acknowledging the satisfactory way in which they, Messrs. J. G. White and Co., carried out their work, and the essentially friendly relations which had always existed between them. The extension of the power house was started in July, but it was not available for use until March of this year, and the necessity for it had been shown by the heavy load on the plant on feast days. The capital expenditure during the year had amounted to £78,635, and it was not easy to say when there would be a limit in that direction. He did not think a limit was desirable, for as the city grew, it was to be hoped that their tramways would grow also. They had certain additional expenditures now in view. Their concession obliged them to construct a branch line to the suburb of Maldonado, which would be just over three miles in length, and they were also spending money on improving the hotel at Pocitos, which belonged to them and which acted as a feeder to the trams. Their track had been maintained in excellent condition, and so also had their cables. The efficiency of their system depended upon its proper maintenance, and there could be no greater extravagance than to starve their equipment. The cars had been so well maintained, that when necessary to cope with the heavy traffic on feast days they had been able to put nearly the whole of them into service. They now had 215 cars and 73 trailers. The results of the year were quite satisfactory, and they showed continued expansion, which was due not merely to the completion of the electrification, but was a result of the sustained development of Monte Video. The traffic receipts for the past year amounted to £253,257, as compared with £232,738 in 1908, showing an increase of £20,519—an increase of nearly 9 per cent., or of more than 27 per cent. as compared with 1907. It was interesting to compare last year's traffics, which represented the first complete year of electrical working, with the last complete year under animal traction. That was in 1906, and the traffics in that year were £129,978, so that last year they showed an increase of £123,279, or nearly double. The number of passengers carried last year was 29,293,804 against in the previous year 25,901,439, showing an increase of 3,392,365—an increase of 13 per cent. over 1908, and of 35 per cent. over 1907. Last year's figures were equivalent to carrying the population of Monte Video 95 times during the year, and showed the large part which was taken in the life of the city by the tramways, and the important factor which they should prove in its future development. Having detailed the various pleasure and other traffics which the company was likely to obtain in addition to its regular daily traffic, the chairman said that last year he told them that the working expenses showed a reduction of 2·15 per cent., bringing them down to 64·09 per cent., and he pointed out that they were working at a disadvantage in having to continue animal service during part of 1908, and that in other ways the organisation was not complete. They looked for a further reduction in expenses, and the present figures justified that anticipation, for they not only showed a reduction of 5·74 per cent. over the previous year, bringing them down to 58·35, but they also showed that the total of the working expenses was actually reduced by £1,366, while the takings increased by £20,519. The percentage of expenses in the last complete year under animal traction was 73·86; last year it was 58·35, showing a reduction of 15·51, and the reduction was likely to continue, as improvements now in course of progress were completed. The net receipts for 1909 were £105,472, as compared with £83,587 in 1908; an increase of £21,885, or over 26 per cent. The receipts were a very big jump from two years ago, when they were only £67,194, so that as compared with 1907 the increase was nearly 57 per cent. If they went back to the last year under animal traction, they found that the net receipts then were £33,978, so that the increase over that year was £71,494, or about 210 per cent. As regarded the current year, the figures were published month by month in the Press, and they showed increases on last year's figures. At the meeting last year he told them that the gross receipts for the six months to April 30th, 1909, had increased by £11,204—from £126,778 to £137,982. The published figures for the current six months of the present year were £150,195, or a further increase of £12,213, which was a larger increase than last year. The net receipts for the six months to April 30th this year were £71,536, as compared with £61,687 for the six months to April, 1909, an increase of £9,849. The working expenses were 52·37 per cent., as against 55·30 per cent., a reduction of 2·93 per cent. The increase in traffics this year was largely due to the increase in the rolling stock and to other improvements, all tending to greater efficiency. With the completion of the power house extension, and the additional accommodation at the car-sheds, the next summer season in Monte Video, which commenced in December, should surpass all previous records. It was interesting to look back at the estimate they made of the likely earnings when the line was fully electrified—that estimate was £255,000 gross, and they expressed the view that in the first year of complete electrification, they would nearly, if not quite, reach that figure. Their estimate was within £1,743 of the actual receipts in that respect, but they were even better as regarded net figures, for whereas they estimated that the net receipts would amount to £100,000, they had actually amounted to £105,474.

Mr. Frame Thomson seconded the motion, and the report was adopted.

Stock Exchange Notices. — The Committee have appointed special settling days as under:—

July 7th.—Metropolitan Electric Tramways.—Scrip, fully paid, for £250,000 5 per cent. debenture stock.

Vera Cruz Electric Light, Power and Traction.—Scrip, fully paid, for £250,000 5 per cent. first mortgage debentures.

Applications have been made to the Committee to allow the following securities to be quoted in the Official List:—

Manila Electric Railroad and Lighting Corporation, Ltd.—$5,000,000 capital stock in shares of $100 each.

China.—The report of the Société des Tramways et Eclairage Electrique de Shanghai for the last financial year shows a profit of £3,916, which is being devoted mainly to depreciation, leaving a small balance to be carried forward.

New York Telephone Co.—The report for the year to December 31st (says the *Financier*) shows net earnings of $10,571,978, while, after deducting interest charges and dividends (amounting to $5,633,329), there was a balance of $3,957,419, increasing the surplus brought forward to $13,591,711.

Nitrogen Production in Norway.—The Société Norvégienne de l'Azote et de Forces Hydrauliques, in which the German triple chemical combination, represented by the Ludwigshafen, Elberfeld and Berlin Works, are interested, realised a surplus of 1,414,000 crowns from the operation of the Svaelgfos-Notodden Works in 1909. After meeting expenses of management and making provision for depreciation and reserve funds, the balance allows of the distribution of 8 per cent., or 16s. per share, on the preference capital and 10s. per share on the 16,668 original ordinary shares; 108,000 new shares of £1,080,000 issued in 1907 receive 5 per cent. interest until June 30th, 1911, on the basis of the agreement entered into between the company and the Société Norvégienne d'Industrie Electro-Chimique, these shares having been introduced on the Paris Stock Exchange last year.

East European Telegraphy. — The Osteuropäische Telegraphen Gesellchaft, of Cologne, which owns a cable between Constanza and Constantinople, and is associated with the Dresden Bank, earned £9,820 in 1909 as compared with £9,260 in the previous year on a share capital of £50,000. The net profits were £4,850 as against £3,990 in 1908, but nothing is stated as to the method of disposal. It will be remembered that the company was one of the competitors for the telephone concession for Constantinople, which was recently secured by Anglo-French interests.

Telephone Company of Egypt, Ltd.—The Register of Transfers of 4½ per cent. redeemable debenture stock is closed until 30th inst., for the preparation of warrants for the half-yearly interest due July 1st.

Shawinigan Water and Power Co.—A dividend of 1 per cent. for the quarter ending June 30th is announced.

Oriental Telephone and Electric Co., Ltd.—The Register of Transfers of 4 per cent. redeemable debenture stock is closed until 30th inst., for the preparation of warrants for the half-yearly interest due July 1st.

British Electric Traction Co., Ltd.

THE fourteenth ordinary general meeting of the above company was held at the Holborn Restaurant, W.C., on Friday last, under the chairmanship of Sir Charles Rivers Wilson.

The CHAIRMAN, in moving the adoption of the report (see ELECTRICAL REVIEW, page 1002), said that the position of the company had improved in several respects. The net profit was only a little better than in the preceding year, but the indications of improvement in the future were distinctly better, and while paying only a small dividend on the preference shares, they had been strengthening the position of the company in various ways, and were dealing as well as they could within the limit of their means with the important question of the depreciation which had taken place in their securities and their assets. When a general revival of business took place in the country they would be able to benefit by it to the fullest extent of their large resources. In the profit and loss account they had not, as in previous years, included on the credit side the profit from the sale of investments which during the past year amounted to £10,397, but they had transferred this amount direct to reserve, and they had charged against reserves sundry losses, which had been ascertained in connection with their undertakings and investments, and this was the course they proposed to pursue in the future. They would charge all losses on present investments, and they would credit the reserves with profits made on the realisation of the present investments. They had also strengthened the position by purchasing £56,206 worth of debenture stock, and had therefore reduced their debenture liability by that amount. As they purchased those debenture stocks below par, they had been able to add to their reserve a further sum of £16,383. They also proposed to add to reserve out of the profits of the year £15,000. They had added, therefore, to reserve this year altogether £41,780, and the total reserve at March 31st, but after allowing for debit charges against reserve, amounted to £633,000, against £602,000 at March 31st, 1909. This was in addition to special reserves and amounts written off, as shown in the profit and loss account, amounting to £13,000. With regard to their investments, the proportion which did not earn any return during the year was less by £342,000 than in the preceding year, and the return on the whole of the investments was 2·63, as compared with 2½ per cent. in the preceding year, which was a slight improvement. The average yield on their investments was, of course, very low, and every effort had been made to improve it. The report described some of the steps which had been taken in order to increase the dividends from their associated companies, and reference was made to the introduction of the "fair fare" system on the tramways. It was not until January 1st of this year that the "fair fare" system was inaugurated. The shareholders had received a pamphlet which fully described the system which consisted in dividing the routes into short sections and in charging a fare according to the number of those sections travelled. Those who were present last year would remember the very interesting discussion that took place in regard to the possibility of obtaining the minting of a new coin representing 1½d. They gave the matter their careful consideration, and came to the conclusion that it was necessary to do something more than merely increase the existing fares by a farthing, and what they did was to increase the facilities for travel and give every inducement to passengers to travel longer distances for only a proportionate increase in the fare, and they hoped to earn more money. Of course, each route had had to be considered separately. What was possible in the case of a small undertaking in the provinces might not be advisable on a large metropolitan system, and they had had to give the most careful consideration to each individual case. The company was interested in nearly 400 route miles of tramways and light railways, which served upwards of 100 different towns and districts, and working under varying conditions, so that while they had the benefit of a very large and varied experience, they had, on the other hand, the difficulty of not being able to adopt one uniform system for all their undertakings. It was satisfactory, however, to be able to say that since the beginning of this year the traffic returns had shown a marked improvement, but it was not possible for him to make any definite statement yet as to whether this improvement was entirely due to the "fair fare" system, or whether it was due to better weather conditions and improvement of trade. They would be able to form a more accurate judgment at the end of the year when they received the reports of the associated companies. He hoped, however, that the improvement might be maintained. He might add that it was in the nature of a compliment to the efforts they had made that the "fair fare" system in a modified way had already been adopted on some undertakings in which they had no concern. He wished he could give them information in detail about the various undertakings in which they were interested, because they would then be able to realise what an important work the company was carrying on in this country as well as abroad. But as there were some 50 or 60 of these undertakings, it was obviously impossible, within the limits of an ordinary speech, to even refer to them all. He would, therefore, deal with them in groups, so as to be able, at any rate, to give some general indication of their nature and prospects. Referring to the list of investments in the first schedule of the report, they would find at the head of the list £200,000 of Consols, the cost of which was £196,373. Like many other securities, their market value had fallen since they acquired them. The next in the list is the Airdrie and Coatbridge, and that might be taken as a type of several other tramway undertakings, which included Barnsley, Cavehill, Devonport, Gateshead, Gravesend, Greenock, Hartlepool, Jarrow, Middleton, Oldham, Ashton, Peterborough, Southport, Taunton, Tynemouth, Worcester and Wrexham. All these undertakings were doing excellent work, but most of them were only earning moderate returns. Some of them were quite satisfactory. Gateshead and Oldham, for instance, paid 6 per cent. on the ordinary shares. They were well managed, and were not over-capitalised, but the fares they were able to charge did not, speaking of the undertakings collectively, leave an adequate profit. Then they came to undertakings like the Auckland Tramways, New Zealand, these served to illustrate what profit could be made by tramways working under better conditions than those obtaining in this country. Auckland was only about the same size as many of the smaller towns they served in this country, yet the people travelled much more and paid higher fares. Notwithstanding that the wages paid by the company in Auckland were much higher than in this country, a satisfactory return was being earned, the company paying regularly on its ordinary capital at least 6 per cent., and making very substantial provision for the future. The next was the Banbury Electric Supply Co., which might be taken as a type of several other electrical supply undertakings in which they were interested, which included Lewes, Penarth and Birkdale. In the case of small electric companies not combined with tramways, the progress was slow, but nevertheless steady. It took some little time to build up these small electric supply undertakings, but when once they had turned the corner, the profits increased rapidly and the undertaking became fairly remunerative. Those investments need cause them little anxiety. Speaking of electricity supply undertakings, he might as well refer to another group of undertakings which combined small electric light business with tramways. These were the Kidderminster, Leamington, Warwick, Merthyr, Sheerness, South Metropolitan and Weston-super-Mare. Those undertakings presented some curious features. In the early days of the enterprise any kind of profit made on the tramways was neutralised by a deficiency on the lighting business, but after a time the lighting business overtook the tramway profits, and in due course the advantages of combination asserted themselves. In most of these undertakings they had passed through a difficult period, and they might look forward to a steady improvement in results, although at Sheerness the improvement seemed to be long deferred. The next investment was the Bideford Railway, which at present was unsatisfactory, because it was worked at a small annual loss, but it was a steam railway and well constructed, with a perpetual tenure, and it only required the opening up of Westward Ho, which would come some day, for the company to become remunerative. He next came to the larger undertakings, like the Birmingham and Midland Tramways, the Metropolitan Electric Tramways, the North Metropolitan Electric Supply, the Potteries Electric Tramway, and the Yorkshire Electric Tramways. With regard to the Metropolitan, it was a source of satisfaction to be able to speak in very hopeful terms. This was a large system of tramways and light railways in the North of London working under equitable arrangements with the County Councils, and giving complete satisfaction to the public and yielding a fair return to the shareholders on a large capital. With that tramway was combined an important and steadily increasing business of electric power supply in an extensive area in the North of London in which the company had a perpetual tenure. With regard to the Birmingham and Midland Tramways they had suffered a great disappointment in that district. They had built up a very large system of tramways in and around Birmingham, and there was every indication that they would be able to do as good a work in that area as they were doing in the North of London. But the local authorities decided to municipalise, and they had cut up the system into segments to the detriment of the public and that company's loss. The Birmingham and Midland group included the City of Birmingham Co., and the present position of that company, notwithstanding its misfortunes, showed what could be done by tramways in large cities, even by companies hampered as they were. The City of Birmingham Co. had a paid up capital of nearly £600,000, and as a result of cumulated profits and the sale of some of its property, practically the whole of its capital was in the form of cash, or investments capable of being converted into cash. That company had paid for several years a dividend amounting to 10 per cent. on the ordinary shares, and they had very valuable property still awaiting realisation. The Birmingham and Midland group also included the Shropshire and Worcester Electric Power Co., which owned Acts of Parliament giving perpetual supply for a large area, and they were engaged in developing the business of that company, and hoped in this way to make amends for the loss of tramway profits in the district. The Bombay Tramways and Supply Co. was becoming one of their best undertakings. The electric tramways were complete, and the electric supply business was developing exceedingly well. Sir Edward Sassoon, the chairman of the company, in addressing the shareholders a short time ago, said that the past history of the company had been one of uninterrupted progress, and its future prospects were very promising, and they looked forward at no long time to paying a dividend on the ordinary shares. The Potteries and the Yorkshire Tramways were both undertakings without electric supply, and they were entirely dependent upon the tramways for a dividend. Business in both of those districts had been very depressed, but, nevertheless, they received a small return on their shares in those companies. He had said sufficient to show that they were doing really good work, but in many cases they were inadequately remunerated for the services rendered to the public, and their profits were small. He could easily show they were not alone in that respect, and if they compared like with like, they had nothing to be ashamed of. A paper had been prepared, from which it appeared that there were about 60 tramway undertakings in the United Kingdom worked by companies in which the British Electric Traction Co. was not interested. Only 18 of these companies paid dividends on their ordinary

shares, and five others paid a dividend on their preference shares only. That was to say, that out of 59 of such companies only 23 returned dividends on their capital, preferred and ordinary, whilst in the case of 56 companies associated with the British Electric Traction Co., 30 paid dividends on their preferred and ordinary shares. Of the 18 companies unconnected with the British Electric Traction Co. which paid dividends on their ordinary capital, three companies made a return of 6 per cent., one of 5 per cent., and 14 paid an average of only 2½ per cent., whilst there were 38 companies, so far as he could make out, which paid no dividend of any kind. His only object in giving these facts and comparisons was to impress on the shareholders that the management of their company was efficient and economical, and the reason why they were not earning larger dividends was to be found in causes beyond their control. It was not in their power to improve general industrial conditions in the country, but it was a long road which had no turning, and it was reasonable to hope that trade would revive and they would reap their share of the improvement. But they were not content to rest on hopes only, and were doing everything which could be done to improve the position in other ways in which, of course, they had to be very cautious and avoid risks. He had not much to say about the Brush Co, in which they were largely interested. It was at present making a loss, but it was a well-equipped factory with an able staff, and he did not think that depression, which applied to a greater or less degree to all electrical industries in the country, could permanently continue. Meanwhile he was glad to say that they were able to hold their own. The British Electric Traction Co. had large liquid reserves and securities which could be realised should the necessity arise. Therefore they were in a strong position for the purpose of entering on any enterprise whenever they saw the opportunity of doing so with a fair prospect of profit presenting itself. They had at present two objects prominently before them, viz., to earn dividends for shareholders, and to make provision for depreciation. Whilst profits were small they could not, of course, do much in this direction, but what they were able to do this year by way of paying a small dividend on the preference shares, and by way of improving the reserves against depreciation must be accepted by the shareholders as an earnest of the efforts which they hoped would enable them to pay more in the future. With regard to the important question of depreciation, the directors recognised that some of their assets had suffered by considerable depreciation, but they felt that their own securities were undervalued on the market by reason of the fact that their profits, and consequently their dividends, were small. Nor did he think that sufficient consideration was given to the financial strength of the company or its prospects. He would like to express the appreciation of his colleagues and himself of the patience and forbearance, and he might say the generosity, with which they had dealt with the management and administration of the company. He could assure them that this attitude of the shareholders towards the board had given them great support and great encouragement in feeling that the shareholders realised the enormous difficulties with which they had to contend. He had the most earnest conviction that if the shareholders would only continue this forbearance and patience for a short time longer they would have no reason to regret it.

Mr. E. Garcke seconded the motion.

Mr. Lea Smith pointed out that no information had been given as to the number of passengers carried and the average fares, which he thought was rather important. Ten years ago the price of their shares was £18, whilst last year they were 7s. 6d. If only they could earn a small fraction of profit on their shares they would have dividends. He had read the pamphlet with regard to fares, which the chairman had alluded to, but he did not see anything in it for the shareholders. They did not come into this business or any other as benefactors to the public, and he did not think the public realised how badly off the company was, and the risk which they (the public) ran in having the tramways taken off the road. He suggested that fares should be raised.

Mr. Croft said the last speaker did not appreciate the difficulties which had been created for the company by the municipal authorities. It was through such action that the associated companies had been hampered. The speaker proceeded to refer to the Brighton and Shoreham Railway, and hoped the company would retain its hold on that concern, because he believed, if eventually it was electrified, it would prove a success.

Mr. Marx Lyons thought the position of the company was stronger than had been disclosed. He was largely interested in the City of Birmingham tramways, and he believed it was likely that next year they would receive £30,000 from that source.

Mr. Butterworth referred to a large number of undertakings in which the company were interested which showed no return, and said they required a little more judgment in the investment of their money.

Mr. Candler said the chairman had threatened them with the intention of doing more business, and had also alarmed them by giving a large number of companies who paid little or nothing to the shareholders. It was an alarming statement for the whole of England, and he did trust they would not spend more capital without a considerable amount of care. The chairman had pointed out, and he believed perfectly sincerely, that they had been efficient and economical in their management, but such efficiency and economy had produced nothing for the shareholders, which was not a satisfactory state of affairs. He hoped the policy of the board would be rather to diminish their interest in things which were unsuccessful.

Mr. E. J. Nicholl said he was late president and general manager of the Rochester Street Railways, in the State of New York, which operated about 160 miles of tramways. They found that no tramway which had less than 30 miles ever paid them. He advised the board not to be hoodwinked to buy shares in small concerns, because they did not pay.

Mr. Parker asked if the board were quite comfortable in their minds with regard to the purchase of second debenture stock?

The Chairman said it was all very well to talk about putting up the fares, but they could not do it. If they did, they would lose traffic. The attitude of the public towards all these things was one of extreme unfairness. They rendered public service, and were looked upon almost as a public enemy. The public wanted to be carried for nothing, and it was nothing to them if shareholders did not get a return for their money. Why they did not run a line of tramways from Brighton to Worthing was simply because they were prevented by the local authority of Hove, but they were keeping their franchise alive by running a horse car, in the hope that better counsels might ultimately prevail. The conditions of tramways in this country and in New York were very different.

The report was then adopted, and the retiring directors were re-elected.

Anglo-Portuguese Telephone Co., Ltd.

The twenty-third ordinary general meeting was held on Thursday, June 16th, at the Cannon Street Hotel, E.C., Mr. Herbert Allen presiding.

The Chairman, in proposing the adoption of the report (see Electrical Review, page 963), said that the accounts were very gratifying but not particularly inspiriting, as dividends of 8 per cent. when repeated too often were apt to become monotonous. There was not much to be gained by making a comparison of one year's results with its immediate predecessor—he preferred to review the company's progress over a period of years. In the five years between 1904 and 1909 the gross income had increased from £25,962 to £49,498; at the same time the gross profit had grown from £10,796 to £29,767, and the net profit from £8,360 to £16,571—in other words, their business and profits had just about doubled in the period. About six years ago they were paying a dividend of 3 per cent. on a capital of £51,000, but since then they had got up in the world, and they were now for the third year in succession paying a dividend of 8 per cent. on a capital of £100,000. In the same period they had built up a general reserve fund of £27,500, equal to 27½ per cent. of the share capital, and an exchange fluctuation fund of £4,000. The capital expenditure last year was £13,476, and in the last four years it had amounted to £44,818. They had not raised a penny on capital account in that period; the whole of the £44,818 having been provided for out of their undivided profits, and he did not think that anything could be more satisfactory. The event of the year had been the inspection of their telephone system in Lisbon and Oporto by Mr. Frank Gill, the chief engineer of the National Telephone Co. On the principle that nothing was so good that it might not be better, they thought they would like to know on the highest possible expert authority if anything further could be done to improve their installations or services, but as they anticipated, Mr. Gill had not much fault to find with what they had done. Nevertheless his visit had had an excellent effect in still further increasing the efficiency and economy of their workings. Although their dividend was only 8 per cent. they were putting to reserve a sum equal to a further 7½ per cent., and after setting aside a substantial sum for the redemption of the debentures they carried forward an amount equal to another 5 per cent. on the capital, so he did not think they could be charged with paying an extravagant dividend. The past year had established a record both in income and profits, and he ventured to say that they would create another record in both those respects during the current year.

Mr. H. F. Jackson seconded the motion.

In reply to the remarks of a shareholder the Chairman said it was very difficult to say, in a telephone company, if the capital expenditure would ever stop. As long as they could spend money wisely it would be to their advantage to do so.

The report was adopted.

Prospectus.—*Electric Light and Power Co. of Cochabamba.*—This company, which is incorporated in accordance with the laws of the Republic of Bolivia, has been offering this week 6 per cent. Government guaranteed loan for £300,000 at 98 per cent. The prospectus states that the company is now constructing an electric railway from Cochabamba to Quillacollo in Bolivia, a distance of 15 km., and the Government have arranged with the company for the construction of a second electric railway from Quillacollo to Arani, a distance of 30 km., which branches to Caraza and Vinto, and for the erection of factories for the generation and supply of electric power. The Government has authorised the company to issue bonds of the nominal value of £300,000, and unconditionally guarantees the payment of the amount of £24,000 per annum required for the service of the bonds. The list was to close yesterday.

Montreal Light, Heat and Power Co.—According to the *Financier*, the ninth annual report shows a net revenue of $2,393,000 against $2,235,000 for the preceding year, or, after fixed charges are deducted, a net income of $1,911,000, against $1,746,000 last year. The surplus, after payment of dividends, amounts to $721,000. An interesting part of the report is the gain of $161,000 in gross revenue, contrasted with an increase of operating expenses of only $4,000. The heavy gain in net earnings, too, was made despite numerous reductions in the prices of the company's products. The general balance-sheet shows the company to be in excellent financial condition.

MARKET QUOTATIONS.

Wednesday, June 22nd.

CHEMICALS, &c.		Latest Price.	Fortnight's Inc. or Dec.
a Acid, Hydrochloric	per cwt.	5/-	..
a „ Nitric	„	22/-	..
a „ Oxalic	„	28/-	..
a „ Sulphuric	„	5/6	..
a Ammoniac, Sal	„	42/-	..
a Ammonia, Muriate (crystal)	per ton	£29	..
a „ „	„	£30	..
a Bleaching powder	„	£5 10	..
a Bisulphide of Carbon	„	£18	..
a Borax	„	£16	..
a Ferro-Silicon (50 %)	„	£10	..
a Copper Sulphate	„	£18	..
a Lead, Nitrate	„	£26	..
a „ White Sugar	„	£23 10	..
a „ Peroxide	„	£32	..
a Methylated Spirit	per gal.	2/6	..
a Potassium, Bichromate, in casks	per lb.	3¼d.	..
a Potash, Caustic (75/80 %)	per ton	£20	..
a „ Chlorate	per lb.	3½d.	..
a „ Perchlorate	„	4½d.	..
a Potassium, Cyanide	„	7d.	..
a Shellac	per cwt.	70/-	..
a Sulphate of Magnesia	per ton	£4 10	..
a Sulphur, Sublimed Flowers	„	£6 10	..
a „ Recovered	„	£5 10	..
a „ Lump	„	£5	..
a Soda, Caustic (white 70 %)	„	£11	..
a „ Chlorate	per lb.	3½d.	..
a „ Crystals	per ton	£3 5	..
a Sodium Bichromate, casks	per lb.	3d.	..
a „ Cyanide (basis 100 %)	„	7d.	..
METALS, &c.			
b Aluminium Ingots, in ton lots	per ton	£80	..
b „ Wire, in ton lots	„	£112	..
b „ Sheet, in ton lots	„	£120	..
p Babbitt's metal ingots	„	£38 to £145	..
c Brass (rolled metal 2" to 12" basis)	per lb.	7½d.	..
c „ Tube (brazed)	„	8½d.	..
c „ „ (solid drawn)	„	6¾d.	..
c „ Wire, basis	„	6¼d.	..
c Copper Tubes (brazed)	„	8¾d.	¼d. dec.
c „ „ (solid drawn	„	8¼d.	¼d. dec.
g „ Bars (best selected)	per ton	£69	£1 dec.
g „ Sheet	„	£69	£1 dec.
g „ Rod	„	£69	£1 dec.
e „ (Electrolytic) Bars	„	£57 15	£1 15 dec.
e „ „ Sheets	„	£74	£1 15 dec.
e „ „ Rod	„	£62 10	£1 15 dec.
e „ „ H.C. Wire	per lb.	7 7/32d.	1/32d. dec.
f Ebonite Rod	„	6/-	..
f „ Sheet	„	5/6	..
n German Silver Wire	„	1/6	..
h Gutta-percha, fine	„		..
h India-rubber, Para fine	„	9/2	..
i Iron Pig (Cleveland warrants)	per ton	49/1	5d. dec.
l „ Wire, galv. No. 8, P.O. qual.	„	£14	..
g Lead, English Ingot	„	£13	2/6 inc.
m Manganin Wire No. 28	per lb.	6/6	..
g Mercury	per bot.	£8 15	..
d Mica (in original cases) small	per lb.	6d. to 1s.	..
d „ „ „ medium	„	2/6 to 4/-	..
d „ „ „ large	„	4/6 to 8/6	..
p Phosphor Bronze, plain castings	„	11d.	..
p „ „ rolled bars & rods	„	1/3	..
p „ „ rolled strip & sheet	„	1/3	..
o Platinum	per oz.	130/-	6/6 inc.
c Silicium Bronze Wire	per lb.	3½d.	..
r Steel Magnet, in bars	per ton	£55	..
g Tin, Block (English)	„	£147 to £148	£1 dec.
n „ Wire, Nos. 1 to 16	per lb.	1/10	..
p White Anti-friction Metals:— "Ibis" brand	per ton	£45 to £150	..
k Zinc, Sh's (Vieille Montagne bnd.)	„	£26	..

Quotations supplied by—

a G. Boor & Co.
b The British Aluminium Co., Ltd.
c Thos. Bolton & Sons, Ltd.
d F. Wiggins & Sons.
e Frederick Smith & Co.
f India-Rubber, Gutta-Percha and Telegraph Works Co., Ltd.
g James & Shakspeare.
h Edward Till & Co.
i Bolling & Lowe.
k Morris Ashby, Ltd.
l Richard Johnson & Nephew, Ltd.
m W. T. Glover & Co., Ltd.
n P. Ormiston & Sons.
o Johnson, Matthey & Co., Ltd.
p London Phosphor Copper & Bronze Co., Ltd.
r W. F. Dennis & Co.

Official Announcements re Companies. — The following companies will, unless cause is shown to the contrary, be struck off the register within three months, and will accordingly be dissolved:—

Electrical Vehicles Development Co., Ltd.
Foreign Chemical and Electrolytic Syndicate, Ltd.
Lancashire and Cornish Boiler Syndicate, Ltd.
Macclesfield Tramways Syndicate, Ltd.
Newark Electric Supply Co., Ltd.
Ozone Purification Syndicate, Ltd.
Railway and Tramway Concessions Syndicate, Ltd.
Sedneff Batteries, Ltd.
Ystradgynlais Electric Lighting Co., Ltd.

Winnipeg Electric Railway Co.—A dividend at the rate of 10 per cent. per annum is announced for the quarter ending June 30th.

STOCKS AND SHARES.

Tuesday Evening.

Business in the Stock Exchange has sunk to a low ebb, for which an ever-varying assortment of reasons are dished up in the financial columns of the daily newspapers. As there is nothing much else to write about, the changes have to be rung on this theme. It is clear to every member of the Stock Exchange, however, that the check administered to business, of all kinds, by the shock of King Edward's death, has not been surmounted yet, and in addition to many minor reasons for the dulness, this stands behind, and emphasises the public disinclination to play an active part in the Stock Exchange markets. Amongst the few lively features in the markets, Anglo-American Telegraph Deferred stock continues to remain in the front rank. A good deal of profit-taking followed the announcements respecting the arrangements between the Anglo-American Telegraph and the American Telephone and Telegraph Companies. Upon these realisations, the price of the Deferred went back a point or so, and the Preferred lost a little of the big gain secured last week. The Ordinary shed 2, to 68. In sympathy, Direct United States shares went back 15s. Mackay Companies' Common at 88 show a loss of 3½, of which the dividend accounts for 1¼, while the Preferred at 77, *ex* 1 per cent. dividend, is practically unchanged. American Telephone and Telegraph stock sticks at 139.

Great Northern Telegraphs are a trifle better, and West India and Panama Ordinary are ⅛ down.

National Telephone issues are in some request, the Preferred being most favoured. The Third Preference gained 2s. 6d., and the 4 per cent. Debenture stock is ½ up. Marconi's are slightly more active, but the price shows no quotable alteration at 15¼ middle. The report, out the other day, contains more ground for real encouragement than has been the case for a long time, but even now it requires a measure of hardy faith to buy the shares as anything except a speculative investment.

Tube Railway stocks are out of favour, and only in Metropolitan Consolidated is there any semblance of animation. "Mets." dropped to 41, a fall of 1¾, before a rally occurred, which raised the price to 41½. Districts are weak at 22¼. One explanation advanced for these declines is that the public won't travel underground more than they are compelled to do in this weather. Central London Ordinary and Deferred are both a point lower, although it is said the Anglo-Japanese Exhibition is proving a great success. A dealer in the market, commenting upon the condition of affairs there, remarked that this was good growing weather for prices, but that without the public the growing facilities were wasted.

The British Electric Traction meeting proved, as usual, an interesting function, if only by reason of the chairman's speech. Its effect, however, was to cause depression in the price of the Preference shares, which lost the gain of last week and another ⅛ into the bargain. London United Trams are dull. Underground Electric Railways of London 6 per cent. Income bonds again receded a point. Mexican Canadian issues are quietly steady. Mexico Trams rose ½, and the Power Co.'s Preferred stock added a similar fraction to its quotation. Rio Trams are firm at 96, the 5 per cent. first Mortgage bonds being good at 99¼.

Both Debenture stocks of the County of London Electric Lighting Company are better, scoring the only movements in the whole of metropolitan price lists. The advertising campaign continues, and the originators deserve a rich reward for their courage in carrying the battle into what hitherto has been very much the gas companies' own ground. In the foreign group, River Plate Electric Preference are a shade harder, and no further movements remain to be recorded.

The issue of Anglo-Argentine Tramway third Debenture stock was made at an attractive price, although it remains to be seen whether the public have applied for the full amount offered. Doubt on this point caused the price to be lowered to 1½ discount. So far as the existing securities are concerned, the Second Preference rose ⅛, and no movement occurred in the other issues.

British Columbia Electric Railway Preferred Ordinary gained a point, on the vigorous manner in which the reputedly-coming "Lumber Boom" is being pushed. Manufacturing shares are quiet, and a rise of ⅛ in Babcock & Wilcox Ordinary is the solitary movement.

Calcutta Electric Supply Corporation, Ltd.—The number of units delivered to consumers during the four weeks ended May 27th, 1910, were 786,249, compared with 693,479 units in the corresponding four weeks of 1909.

SHARE LIST OF ELECTRICAL COMPANIES.

TELEGRAPH AND TELEPHONE COMPANIES.

Present Issue.	NAME.	Stock or Share. *	Dividends for the last four years. 1906.	1907.	1908.	1909.	Closing Quotations June 14th.	Closing Quotations June 21st.	Business done week ended June 21st, 1910. Highest	Lowest.	Rise + or Fall —	Present Yield per cent. £ s. d.
25,000	Amazon Telegraph Co.'s shares, Nos. 1 to 25,000	10	Nil	Nil	Nil	Nil	3⅜ — ⅞	3⅜ — ⅞	..	..	..	Nil.
116,200	Do. do. 5 % Debs., Nos. 1 to 1,950 Red.	100	5 %	5 %	5 %	5 %	100½ —102½	100½ —102½	..	..	..	4 17 7
$255,196,00	American Telephone & Telegraph, Cap. Stock ..	$100	8 %	8 %	8 %	8 %	138 —140	138 —140	104½	..	..	5 14 4
$58,000,000	Do. Collat. Trust, 4% Bonds, 1 to 28,000 and 53,001 to 78,000	$1000	4 %	4 %	4 %	4 %	93 — 95	93 — 95	..	..	..	4 4 8
558,460	Anglo-American Telegraph	Stock	3⅝%	3⅝%	£3 4s.	3⅜%	69 — 71	67 — 69	..	..	—2	5 5 1
3,220,770	Do. do. 6 % Pref.	Stock	6 %	6 %	6 %	6 %	112½ —114½	110 —112	113½	110½	—2½	5 7 2
3,220,770	Do. do. Deferred	Stock	1⅝%	1 %	8/-	25/-	30 — 30½	28½ — 28⅝	30	29	— ½	4 6 11
47,725	Anglo-Portuguese Tel., 5 % Mort. Deb. Stock Red.	100	5 %	5 %	5 %	5 %	00 —102	100 —102	..	..	..	4 18 0
44,000	Chili Telephone, Nos. 1 to 44,000	5	8 %	8 %	8 %	8 %	7⅛ — 8⅛	7⅛ — 8⅛	..	..	..	4 18 11
2,449,176	Commercial Cable, Sling. 500 year 4% Deb. Stk. Red.	Stock	4 %	4 %	4 %	4 %	86 — 88	86 — 88	87½	86	..	4 10 11
15,000	Cuba Telegraph	10	5 %	6 %	6 %	6 %	8¼ — 9	8½ — 9	..	..	..	6 13 4
6,000	Do. 10 % Pref.	10	10 %	10 %	10 %	10 %	16½ — 17½	16½ — 17½	16½	..	..	5 17 8
12,981	Direct Spanish Telegraph, Ord.	5	4 %	4 %	4 %	..	3¼ — 3⅜	3⅛ — 3⅜	..	..	..	5 3 8
6,000	Do. do. 10 % Cum. Pref. ..	5	10 %	10 %	10 %	10 %	7⅞ — 8⅛	7⅞ — 8⅛	..	..	..	6 1 3
30,000	Do. do. 4½ % Debs.	50	4½%	4½%	4½%	4½%	100 —102	100 —102	..	..	..	4 8 8
60,710‡	Direct United States Cable	20	4½%	4½%	4½%	4 %	15½ — 16	15 — 15½	15⅝	..	..	5 0 0
36,000	Direct W. India Cable, 4½ % Reg. Deb., 1 to 1,200, R.	100	4½%	4½%	4½%	4½%	100 —102	100 —102	..	..	..	4 8 8
4,000,000	Eastern Telegraph, Ord. Stock..	Stock	7 %	7 %	7 %	..	133 —136	133 —136	134	133½	..	5 2 11
2,000,000	Do. 3½ % Pref. Stock..	100	3½%	3½%	3½%	3½%	85 — 87	85 — 87	..	..	..	4 0 6
1,896,706	Do. 4 % Mort. Deb. Stock, Red. ..	Stock	4 %	4 %	4 %	4 %	101 — 103	101 —103	102½	..	..	3 17 8
800,000	Eastern Extension, Australasia, and China Tele	10	7 %	7 %	7 %	7 %	12⅜ — 13⅛	12⅜ — 13⅛	12⅝	..	..	5 5 8
753,400	Do. 4 % Deb. Stock	Stock	4 %	4 %	4 %	4 %	101 —103	101 —103	..	..	..	3 17 8
200,000‡	East. & S. Afric. Tel., 4 % Mt Db. Mauritius Sub.) 1 to 8,000	25	4 %	4 %	4 %	4 %	99½—101½	99½—101½	..	..	..	3 18 10
181,127	Globe Telegraph and Trust	10	5⅞%	5⅞%	5⅞%	5⅞%	10⅜ — 10⅞	10⅜ — 10⅞	10⅝	10½	..	5 5 9
181,127	Do. do. 6 % Pref...	10	6 %	6 %	6 %	6 %	13 — 13½	13 — 13⅜	13⅜	..	..	4 8 11
150,000	Great Northern Telegraph, of Copenhagen.. ..	10	20 %	20 %	18 %	..	20½ — 21½	20⅜ — 21⅜	..	..	+ ⅛	5 14 3
17,000	Indo-European Telegraph	25	18 %	18 %	18 %	13 %	53 — 55	53 — 55	..	..	..	6 15 8
$41,880,400	Mackay Companies Common	$100	3½%	4 %	4 %	4½%	90 — 93	90 — 93	..	..	..	4 1 5
$50,000,000	Do. do. 4% Cum. Pref.	$100	4 %	4 %	4 %	4 %	77 — 80	77 — 80	..	..	..	5 0 0
894,190	Marconi's Wireless Telegraph	1	Nil	Nil	Nil	..	1⅛ — 1⅜	1⅛ — 1⅜	..	..	..	Nil
72,680	Monte Video Telephone Co., Ltd. Ord.	1	6 %	6 %	6 %	6 %	¾ — 1	¾ — 1	..	..	..	6 0 0
86,492	Do. do. do. 5 % Pref. ..	1	5 %	5 %	5 %	5 %	2 — ⅞	2 — ⅞	..	..	+ 1/16	5 11 1
2,235,000	National Telephone, Pref. Stock	100	6 %	6 %	6 %	6 %	104½ —106	106 —107½	107½	106½	+ 1½	5 11 7
3,725,000	Do. do. Def. Stock	100	5 %	6 %	6 %	6 %	124 —126	124 —126	124½	124½	..	4 15 3
15,000	Do. do. 6 % Cum. 1st. Pref.	10	6 %	6 %	6 %	6 %	10 — 10⅜	10 — 10⅜	..	..	..	5 11 8
15,000	Do. do. 6 % Cum. 2nd Pref.	10	6 %	6 %	6 %	6 %	10 — 10⅜	10 — 10⅜	..	..	..	5 11 8
250,000	Do. do. 5 % Non-cum. 3rd P., 1 to 250,000	5	5 %	5 %	5 %	5 %	5⅛ — 5⅜	5⅜ — 5⅝	5⅝	..	+ ⅛	4 8 11
2,000,000	Do. do. 3½ % Deb. Stock Red, ..	Stock	3½%	3½%	3½%	3½%	97 — 99	97 — 99	..	..	..	3 11 8
1,988,593	Do. do. 4 % Deb. Stock Red.	100	4 %	4 %	4 %	4 %	100 —102	100½—102½	..	..	+ ½	3 18 5
179,313	Oriental Telep. and Elec. 1 to 171,504, fully paid ..	1	7 %	8 %	8 %	8 %	1⅞ — 1¹⅞₁₆	1⅞ — 1¹⅞₁₆	30/-	..	..	4 14 10
50,000	Do. do. do. 6 % Cum. Pref... ..	1	6 %	6 %	6 %	6 %	1¹⅞₁₆ — 1⅞	1¹⅞₁₆ — 1⅞	..	..	..	4 14 9
196,955	Do. do. do. 4 % Red. Deb. Stock ..	100	4 %	4 %	4 %	4 %	88 — 90	88 — 90	..	..	..	4 8 11
99,400	Pacific & European Tel., 4 % Guar. Debs., 1 to 1,000	100	4 %	4 %	4 %	4 %	97 — 99	97 — 99	..	..	..	4 0 10
11,889	Reuter's	8	5 %	5 %	5 %	5 %	7⅞ — 8	7⅞ — 8	..	..	..	4 18 9
145,955	Telephone Co. of Egypt, 4½ % Deb. Red.	100	4½%	4½%	4½%	4½%	100½—102½	100½—102½	..	..	..	4 7 10
3,042	Submarine Cables Trust	Certs.	6 %	6 %	6 %	..	128 —131	128 —131	..	..	..	4 11 7
120,000	United River Plate Telephone	5	8 %	8 %	8 %	..	7⅛ — 7⅜	7⅛ — 7⅜	..	..	..	5 8 6
40,000	Do. 5 % Cum. Pref., Nos. 1 to 40,000	5	5 %	5 %	5 %	5 %	5⅞ — 5⅞	5⅞ — 5⅞	..	..	..	4 11 11
80,008	W. Coast of America, 1 to 80,000 & 58,001 to 83,008	2½	2½%	2½%	2½%	..	1⅜ — 1⅝	1⅜ — 1⅝	23/1½	..	— 1/16	4 10 11
150,000	Do. 4 % Debs., 1 to 1,500 guar. by Braz. Sub. Tel.	100	4 %	4 %	4 %	4 %	98 —100	98 —100	..	..	— ½	4 0 0
207,980	Western Telegraph, Ltd., Nos. 1 to 207,980.. ..	10	7 %	7 %	7 %	..	13⅜ — 14½	13⅜ — 14½	14	13⅜	..	4 18 3
800,000	Do. do. 4 % Deb. Stock Red, ..	100	4 %	4 %	4 %	4 %	101 —103	101 —103	..	..	..	3 18 3
88,321	West India and Panama Telegraph	10	Nil	Nil	Nil	..	1¼ — 1⅜	⅞ — 1	12/6	..	—1/16	Nil
84,553	Do. do. 6 % Cum. 1st Pref.	10	8 %	6 %	6 %	..	8⅝ — 9⅛	8⅝ — 9⅛	8⅝	..	..	6 9 9
4,669	Do. do. 6 % Cum. 2nd Pref.	10	Nil	£3 6	15 %	..	8 — 9	8 — 9	..	..	..	16 12 9
80,000‡	Do. do. 5 % Debs., Nos. 1 to 1,800 ..	100	5 %	5 %	5 %	5 %	100½—102½	100½—102½	..	..	..	4 17 7

ELECTRICAL RAILWAY, MANUFACTURING AND INDUSTRIAL COMPANIES.

640,000	Anglo-Argentine Trams, 5 % Cum. 1s Pref., 1 to 640,000	5	..	..	..	5 %	4⅝ — ¾	4⅝ — 4¾	95/-	93/1½	..	5 2 7
500,000	Do. 5 % 2nd Pref., 800, to 1,300,000	5	..	..	..	5 %	4⅛ — 4⅛	4⅜ — 4⅜	..	..	+ 1/16	5 8 1
4,465,674	Do. 4 % Deb. Stock	Stock	..	..	4 %	4 %	90 — 91½	90 — 91½	91½	90⅜	..	4 7 7
332,337	Auckland E. Trams, 5 % 1st Mort. Deb. Stock ..	100	5 %	5 %	5 %	5 %	105 —107	105 —107	..	..	..	4 13 5
880,000	Babcock & Wilcox, 1 to 880,000	1	20 %	20 %	20 %	24 %	5⅝ — 5⅞	5⅝ — 5⅞	5⅞	5⅝	+ 1/16	4 9 0
100,000	Do. do. 6 % Cum. Pref., 1 to 100,000 ..	1	6 %	6 %	6 %	6 %	1⅛ — 1⅛	1⅛ — 1⅛	..	..	..	3 19
1,000,000	British Aluminium 5 % Mort. Debs. Red.	100	..	..	..	..	..	75 — 80	..	..	..	5 10 0
500,000	British Columbia E. Rail Def. Ord. Stock	100	6 %	8 %	8 %	8 %	142 —147	142 —147	..	..	..	5 8 7
400,000	Do. Pref. Ord. Stock	100	5 %	6 %	6 %	6 %	122 —126	123 —127	..	..	+1	4 14 6
400,000	Do. 5 % Cum. Perp. Pref. Stock	100	5 %	5 %	5 %	5 %	109½ — 112½	109½—112½	..	..	..	4 9 7
238,000	Do. 4½ % 1st Mort. Debs., 1 to 6,250	40	4½%	4½%	4½%	4½%	102 —104	102 —104	..	..	..	4 6 7
212,600	Do. 4½ % Vancouver Power Debs., 1 to 2,800	100	4½%	4½%	4½%	4½%	102 —105	102 —105	..	..	..	4 5 9
188,301	British Electric Traction	10	Nil	Nil	Nil	..	1½ — 1⅝	1½ — 1⅝	18/6	17/6	..	Nil
161,487	Do. do. 6 % Cum. Pref.	10	6 %	8 %	1⅜%	..	3 — 3⅛	2⅞ — 3⅛	59/4½	..	— ½	4 12 4
1,473,658	Do. do. 5 % Perp. Deb. Stock ..	Stock	5 %	5 %	5 %	..	89 — 93	89 — 93	90⅝	..	..	5 7 6
598,986	Do. do. 4½ % 2nd Deb. Stock Red.	100	4½%	4½%	4½%	..	68 — 73	68 — 73	69	69⅛	..	6 3 3
100,000	British Insulated and Helsby Cables	5	10 %	10 %	10 %	10 %	6⅛ — 7	6⅛ — 7	..	..	..	7 2 10
100,000	Do. do. 6 % Cum. Pref.	5	6 %	6 %	6 %	6 %	5⅞ — 6⅛	5⅞ — 6⅛	..	..	..	4 16 0
600,000	Do. do. 4½ % 1st Mort. Deb. Red...	100	4½%	4½%	4½%	4½%	103 —106	103 —106	..	..	..	4 4 11
204,940‡	British Thomson-Houston 4½ % 1st Mort. Debs. ..	100	4½%	4½%	4½%	4½%	101 —104	101 —104	..	..	..	4 6 7
400,000	British Westinghouse 6 % Pref., 1 to 200,000 and 275,001 to 75,000	5	Nil	Nil	Nil	..	1/16 — 3/16	1/16 — 3/16	..	..	..	Nil
1,316,353	Do. do. 4 % Mort. Deb. Stock ..	100	4 %	4 %	4 %	..	59 — 62	59 — 62	60½	59⅜	..	6 9 1
60,000	Browett, Lindley & Co., Ord.	1	Nil	Nil	Nil	..	5/16 — 7/16	5/16 — 7/16	..	..	..	Nil
60,000	Do. do. 6 % Cum. Pref.	1	Nil	Nil	Nil	..	14/6 to 15/6	14/6 to 15/6	..	..	..	Nil
140,976	Brush Electrical Engineering, Ord., 1 to 105,731 ..	1	Nil	Nil	Nil	..	0 — ⅛	0 — ⅛	..	..	..	Nil
900,000	Do. do. Non-cum. 6 % Pref.	1	Nil	Nil	Nil	..	0 — ⅛	0 — ⅛	..	..	..	Nil
125,000‡	Do. do. 4½ % Perp. Deb. Stock ..	Stock	4½%	4½%	4½%	4½%	39 — 44	39 — 44	..	..	..	10 4 6
125,000‡	Do. do. 4½ % Perp. 2nd Deb. Stock..	Stock	4½%	4½%	4½%	4½%	25 — 29	25 — 29	..	..	..	15 8 0
137,610	Calcutta Trams, 1 to 137,610	5	8 %	8 %	4½%	4½%	4½ — 4⅝	4½ — 4⅝	85/-	..	— 1/16	4 17 4
45,304	Do. 5 % Cum. Pref., Nos. 1 to 29,880..	5	5 %	5 %	5 %	5 %	4 — 5	4½ — 5	..	..	..	5 0 0
250,000	Do. 4½ % 1st Deb. Stock..	100	4½%	4½%	4½%	4½%	98 —101	98 —101	..	..	..	4 9 1
35,000	Callender's Cable Construction shares	5	15 %	15 %	15 %	10 %	9½ — 10½	9½ — 10½	9⅝	9½	..	4 17 7
40,000	Do. do. 5 % Cum. Pref.	5	5 %	5 %	5 %	5 %	5 — 5⅛	5 — 5⅛	..	..	..	4 13 0
800,000	Do. do. 4½ % 1st Mort. Deb. Red.	Stock	4½%	4½%	4½%	4½%	102½—104½	102½—104½	..	..	..	4 6 2
491,222	Cape E. Trams., 1 to 491,222	1	Nil	Nil	Nil	..	¼ — ⅜	¼ — ⅜	..	..	..	Nil
450,000	Casimer-Kellner Alkali, 1 to 450,000	1	8 %	12 %	12½%	12½%	2¹⁵⁄₁₆ — 2¹¹⁄₁₆xd	2⅜ — 2½	54/6	..	+1/16	4 10 11
210,153	Do. do. 4½ % 1st Mort. Deb. Stock	100	4½%	4½%	4 %	4½%	106 —109	106 —109	..	..	..	4 2 9
1,890 690	Central London Railway, Ord. Stock	Stock	4 %	3 %	3½%	3 %	69 — 71	68 — 70	70⅜	..	—1	4 5 9
554,655	Do. do. 4 % Pref. Stock	Stock	4 %	4 %	4 %	4 %	86 — 88	86 — 88	..	..	..	4 10 12
554,655	Do. do. Def. do.	Stock	4 %	2 %	2½%	2 %	53 — 55	51 — 53	..	..	— 2	3 15 6
1,480,000	City and South London Railway	Stock	2½%	2½%	1½%	1⅞%	32½ — 33½	32 — 33	32½	32½	— ½	5 6 1
5,000	Crompton & Co., Nos. 1 to 85,000	5	5 %	5 %	Nil	..	⅜ — ½	⅜ — ½	..	..	..	Nil
100,000‡	Do. 5 % 1st Mort. Reg. Debs., 900 of £100, and 901 11,000 of £50 Red	..	5 %	5 %	5 %	5 %	88 — 91	88 — 91	..	..	..	5 9 1

* Unless otherwise stated, all shares are fully paid. ‡ From Manchester Share List.

Continued on next page.

SHARE LIST OF ELECTRICAL COMPANIES.—(*Continued.*)

ELECTRICAL RAILWAY, MANUFACTURING AND INDUSTRIAL COMPANIES.—(*Continued*)

Present Issue.	NAME.	Stock or Share.	Dividends for the last four years. 1906.	1907.	1908.	1909	Closing Quotations June 14th.	Closing Quotations June 21st.	Business done week ended June 21st, 1910. Highest	Lowest.	Rise + or Fall —	Present Yield per cent. £ s. d.
260,000	Dick, Kerr & Co., 1 to 260,000	1	10 %	10 %	6 %	..	1 1/16 — 1 1/8	1 1/16 — 1 1/8	20/7 1/2	..	..	5 1 1
305,000	Do. do. 6 % Cum. Pref., 1 to 305,000 ..	1	6 %	6 %	6 %	6 %	1 — 1 1/8	1 — 1 1/8	..	..	..	5 6 8
271,080	Do. do. 4 1/2 % Deb. Stock	100	4 1/2 %	4 1/2 %	4 1/2 %	4 1/2 %	99 —102	99 —102	..	..	..	4 8 8
60,000	Dublin United Trams. (1896), 6 % Pref., 1 to 60,000	10	6 %	6 %	6 %	6 %	13 — 14	13 — 14	..	..	..	4 7 8
99,361	Edison & Swan Utd., "A" shs., £3 pd., 1 to 99,361	5	4 1/2 %	2 1/2 %	Nil	..	1/16 — 1/8	1/16 — 1/8	..	..	..	Nil
17,189	Do. "A" shares, 01—017,189 ..	5	4 1/2 %	2 1/2 %	Nil	..	1 — 1 1/8	1 — 1 1/8	..	..	..	Nil
307,895	Do. 4 % Deb. Stock Red.	100	4 %	4 %	4 %	4 %	65 — 70	65 — 70	..	..	..	5 14 4
67,720	Do. 5 % 2nd Deb. Stock Prov. Certs. all pd.	100	5 %	5 %	5 %	5 %	79 — 82	79 — 82	..	..	..	6 1 11
112,100	Electric Construction, 1 to 112,100	1	Nil	Nil	Nil	..	1/2 — 5/8	1/2 — 5/8	8/9	..	..	Nil
31,390	Do. do. 7 % Cum. Pref., 1 to 31,390..	1	7 %	7 %	7 %	7 %	1 1/16 — 1 1/8	1 1/16 — 1 1/8	..	..	..	9 0 8
25,000	General Electric Co. (1900), 5 % Cum. Pref. ..	10	5 %	5 %	5 %	..	7 1/2 — 8 1/2	7 1/2 — 8 1/2	..	..	..	6 1 8
200,000	Do. do 4 % Mort Deb.. ..	Stock	4 %	4 %	4 %	4 %	82 — 86	82 — 86	..	..	..	4 13 0
75,000	Gt. N. & City Rail. Pref. Ord. "A" 4 %, 1 to 75,000	10	4 %	1 %	Nil	..	3/4 — 1	3/4 — 1	..	..	..	Nil
96,000	Greenwood & Batley, 7 % Cum. Pref.	10	7 %	7 %	..	..	10 1/2 — 10 3/4	10 1/2 — 10 3/4	..	..	..	6 10 8
80,000	Do. do. 5 % Mort. Debs.	100	5 %	5 %	5 %	..	102 —103 1/2	102 —103 1/2	..	..	..	4 16 10
40,000	Henley's (W. T.), Telegraph Works, Ord.	5	15 %	15 %	15 %	15 %	11 1/2 — 12 1/2	11 1/2 — 12 1/2	13	..	..	6 3 8
40,000	Do. do. 4 % Pref.	5	4 1/2 %	4 1/2 %	4 1/2 %	4 1/2 %	5 — 5 1/2	5 — 5 1/2	5 5/16	5 3/16	..	4 8 9
150,000	Do. do. 4 1/2 % Mort. Deb. Stock	Stock	4 1/2 %	4 1/2 %	4 1/2 %	4 1/2 %	103 1/2 —105 1/2	103 1/2 —105 1/2	..	..	..	4 5 4
50,000	India-Rubber, Gutta-percha & Telegraph Works..	10	10 %	10 %	10 %	10 %	14 1/2 — 15 1/2	14 1/2 — 15 1/2	15 1/8	15	..	6 10 1
37,500	†Liverpool Overhead Railway, Ord.	10	Nil	1/2	Nil	Nil	3/4 — 1	3/4 — 1	..	..	..	Nil
10,000	† Do. do. Pref., fully paid ..	10	5 %	5 %	5 %	5 %	5 1/2 — 5 3/4	5 — 5 1/4	..	..	..	9 1 10
600,070	London United Trams. (1901), 1 to 60,007	10	3 %	3 %	Nil	..	1 1/2 — 2 1/4	1 1/2 — 2 1/4	..	..	..	Nil
599,930	Do. do. 60,008 to 100,000	10	3 %	3 %	Nil	..	1 1/2 — 2 1/4	1 1/2 — 2 1/4	..	..	..	Nil
125,000	Do. do. 5 % Cum. Pref., 1 to 125,000	10	5 %	5 %	3 1/2 %	..	2 — 2 1/4	2 — 2 1/4	..	..	..	15 0 0
1,649,930	Do. do. 4 % 1st Mort. Deb. Stock ..	100	4 %	4 %	4 %	4 %	67 — 71	67 — 71	..	..	..	5 12 8
5,782,062	Metropolitan Consolidated	100	1 %	1 %	1 %	1 %	42 1/2 — 43	41 7/8 — 42 1/4	41 1/2	41 1/4	..	2 7 4
2,640,914	Do. Surplus Lands	100	23 1/2 %	23 1/2 %	23 1/2 %	23 1/2 %	66 — 68	66 — 68	..	..	..	4 0 11
3,235,000	Do. District	100	Nil	Nil	Nil	Nil	23 1/2 — 23 3/4	21 3/4 — 22 1/4	23	21 1/2	—1 1/2	Nil
201,327	Metropolitan Electric Trams., Ord.	1	..	..	4 1/2 %	..	3/4 — 7/8	3/4 — 7/8	..	..	..	5 15 0
314,916	Do. do. Defd....	1	Nil	Nil	Nil	..	1/2 — 3/4	1/2 — 3/4	..	..	..	Nil
500,000	Do. do. 5 % Cum. Pref. ..	1	5 %	5 %	5 %	5 %	3/4 — 7/8	3/4 — 7/8	..	..	..	5 14 8
595,600	Do. do. 4 1/2 % Deb. Stock Red.	100	4 1/2 %	4 1/2 %	4 1/2 %	4 1/2 %	98 —101	98 —101	101	..	..	4 9 1
$10,898,200	Mexico Trams Co., Common Stock	..	..	..	..	..	127 —129	127 1/2 —129 1/2	..	..	+ 1/2	..
$9,000,000	Do. 1st Mort. 50-year 5% Gld. Bds.	..	..	..	5 %	..	99 1/2 — 99 3/4	99 1/2 — 99 3/4	102 1/2	..	..	5 0 9
245,500	Potteries Electric Traction	1	4 %	4 %	Nil	..	1/4 — 3/8	1/4 — 3/8	..	..	..	..
245,500	Do. 5 % Cum. Pref.	1	5 %	5 %	5 %	5 %	1/4 — 3/8	1/4 — 3/8	..	..	..	6 17 11
245,000	Do. 4 1/2 % Deb. Stock	100	4 1/2 %	4 1/2 %	4 1/2 %	4 1/2 %	82 — 85	82 — 85	..	..	..	5 8 6
87,850	Telegraph Construction and Maintenance	12	15 %	17 1/2 %	15 %	17 1/2 %	33 — 35	33 — 35	34 1/2	33 1/2	..	6 5 0
140,000	Do. 4 % Deb. Bds., 1 to 1,500 Red., 1909	100	4 %	4 %	4 %	4 %	100 1/2 —102 1/2	100 1/2 —102 1/2	..	..	..	3 18 1
1,000,000	Underground Electric Railway, 5% Prior Lien ..	..	..	..	5 %	..	100 1/2 —102 1/2	100 1/2 —101 1/2	101 1/2	100 1/2	..	4 18 6
3,000,000	Do. do. 4 1/2% Bonds	..	..	..	..	4 1/2 %	89 — 91	89 — 91	89 1/2	..	..	4 18 11
4,000,000	Do. do. 6% Income Bonds	..	..	..	..	..	37 — 39	36 — 38	..	..	—1	..
66,666	Willans & Robinson, 1 to 80,000 & 80,001 to 116,666	1	Nil	10 %	5 %	Nil	3/4 — 1	3/4 — 1	..	..	..	..
66,666	Do. 6 % C.P., 80,001 to 80,000 & 126,001 to 141,666	6	..	6 %	6 %	8 %	1 1/2 — 1 3/4	1 1/2 — 1 3/4	..	..	..	8 11 5
245,495	Do. % 1st Mort. Deb. Stock		4 %	4 %	4 %	4 %	60 — 70	60 — 70	..	..	..	5 14 4

ELECTRICITY SUPPLY COMPANIES.

80,449	Brompton & Kens. Elec. Lt. Sup., Ord., 1 to 20,000	5	10%	10 %	10 %	10 %	7 1/2 — 7 3/4	7 1/2 — 7 3/4	..	..	..	6 9 0
9,551	Do. do. 7 % Cum. Pref.	5	7 %	7 %	7 %	7 %	7 — 7 1/2	7 — 7 1/2	..	..	..	4 13 4
400,000	Central Electric Supply 4 % Guar. Deb. Stock ..	100	4 %	4 %	4 %	4 %	98 —101	98 —101	..	..	..	3 19 3
80,000	Charing Cross and Strand Electricity Supply ..	5	5 %	5 %	5 %	5 %	3 3/8 — 4 1/8	3 1/4 — 4	77/6	..	— 1/8	6 5 0
80,000	Do. do. do. 4 1/2 % Cum. Pref.	5	4 1/2 %	4 1/2 %	4 1/2 %	4 1/2 %	4 1/8 — 4 3/8	4 1/8 — 4 3/8	86/8	..	..	4 17 4
80,000	Do. "City Undertaking" 4 1/2 % Cum. Prf.	5	4 1/2 %	4 1/2 %	4 1/2 %	4 1/2 %	3 3/4 — 4 1/8	3 3/4 — 4 1/8	..	..	..	5 2 10
445,736	Do. do. 4 % Deb. Stock Red. ..	100	4 %	4 %	4 %	4 %	95 1/2 — 97 1/2 xd	95 1/2 — 97 1/2 xd	97 1/2	..	..	4 0 0
49,486	Chelsea Electricity Supply, Ord.	5	4 1/2 %	4 1/2 %	4 1/2 %	4 1/2 %	3 7/8 — 4 1/8	3 7/8 — 4 1/8	..	..	..	5 9 1
175,000	Do. do. 4 1/2 % Deb. Stock Red. ..	Stock	4 1/2 %	4 1/2 %	4 1/2 %	4 1/2 %	101 —103	101 —103	..	..	..	4 7 5
70,595	City of London Elec. Lighting, Ord. 40,001—110,595	10	6 %	6 %	6 %	7 %	11 1/2 — 11 3/4	11 1/2 — 11 3/4	11 1/2	..	..	5 19 2
40,000	Do. 6 % Cum. Pref., 1 to 40,000	10	6 %	6 %	6 %	6 %	12 — 13	12 — 13	..	..	..	4 12 4
400,000	Do. 5 % Db. Stk.	Stock	5 %	5 %	5 %	5 %	121 —125	121 —125	..	..	..	4 0 0
300,000	Do. 4 1/2 % 2nd. Db. Stk.	100	4 1/2 %	4 1/2 %	4 1/2 %	4 1/2 %	100 —103	100 —103	..	..	..	4 7 5
50,000	County of Durham Electrical Power, Ord.	5	4 %	2 %	Nil	Nil	1 1/2 — 2	1 1/2 — 2	..	..	..	Nil
50,000	Do. do. do. 5 % Pref. ..	5	5 %	5 %	5 %	5 %	2 1/2 — 3 1/2	2 1/2 — 3 1/2	..	..	..	7 13 10
250,000	Do. do. do. 5 % 1st Mtg. Deb.	Stock	..	..	5 %	5 %	94 — 96	94 — 96	..	..	..	5 4 2
40,000	County of London Electric Lighting, Ord. 1—40,000	10	5 %	5 %	5 %	5 %	7 1/2 — 8	7 1/2 — 8	7 1/8	..	..	6 5 0
55,000	Do. do. 6 % Pref., 40,001—60,000	10	6 %	6 %	6 %	6 %	10 1/2 — 11 3/8	10 1/2 — 11 3/8	11 1/16	..	..	5 15 8
400,000	Do. do. 4 1/2 % Deb. Stock ..	Stock	4 1/2 %	4 1/2 %	4 1/2 %	4 1/2 %	105 —108	106 —109	..	..	+1	4 2 7
400,000	Do. do. 4 1/2 % 2nd. Deb. Stock ..	Stock	4 1/2 %	4 1/2 %	4 1/2 %	4 1/2 %	98 —101	99 —102	100 1/2	99 1/2	+1	4 8 8
60,000	Edmundson's Electric Corporation, Ord. Shares ..	5	Nil	Nil	Nil	..	3/8 — 1/2	3/8 — 1/2	..	..	..	Nil
80,000	Do. do. 6 % Cum. Pref.	5	6 %	Nil	Nil	..	1 1/4 — 1 1/2	1 1/4 — 1 1/2	..	..	..	Nil
480,500	Do. do. 4 1/2 % 1st Mort. Deb. Stk.	100	4 1/2 %	4 1/2 %	4 1/2 %	..	74 — 77	74 — 77	..	..	..	5 16 11
$8,160,000	Electrical Dev. Co. of Ontario, 5% 1st Mtg. Gold Bnds.	$500	..	..	5 %	5 %	86 — 89	89 — 92	88 1/2	86 1/2	+3	5 8 8
10,000	Folkestone, 1 to 10,000	5	5%	5%	5%	5%	4 1/2 — 4 3/4	4 1/2 — 4 3/4	..	..	..	5 15 9
10,000	Do. 5 % Cum. Pref., 1 to 10,000	5	5 %	5 %	5 %	5 %	5 — 5 1/4	5 — 5 1/4	..	..	..	4 10 11
90,000	Do. 4 1/2 % 1st Deb. Stock	100	4 1/2 %	4 1/2 %	4 1/2 %	4 1/2 %	101 —104	101 —104	..	..	..	4 6 7
15,000	Hove, 1 to 15,000	5	9 %	8 1/2 %	8 1/2 %	8 1/2 %	7 — 7 1/2	7 — 7 1/2	..	..	..	5 13 4
$1,276,000	Kaministiquia Power Co., 5 % Gold Bnds.	100	..	..	5 %	5 %	102 —104	102 —104	..	..	..	4 16 2
21,000	Kensington and Knightsbridge Electric Ord. ..	5	10 %	10 %	8 %	8 %	6 3/4 — 7 1/4	6 3/4 — 7 1/4	..	..	..	5 10 4
0,000	Do. do. do. 4 % Deben. Stk.	Stock	4 %	4 %	4 %	4 %	94 1/2 — 96 1/2	94 1/2 — 96 1/2	..	..	..	4 2 11
11,000	London Electric Supply Corporation, Limited, Ord.	3	4 %	2 1/2 %	3 %	..	1 3/8 — 2	1 3/8 — 2	32/6	..	..	4 8 11
70,000	Do. do. do 6 % Pref. ..	5	6 %	6 %	6 %	..	4 3/4 — 5 1/4	4 3/4 — 5 1/4	..	..	..	5 14 3
262,855	Do. do. 4 % 1st Mort. Deb. Stk. Red.	Stock	4 1/2 %	4 1/2 %	4 1/2 %	4 1/2 %	90 — 92 xd	90 — 92 xd	..	..	..	4 7 0
300,000	Metropolitan Electric Supply, 1 to 100,000	5	8 %	6 1/2 %	5 %	5 %	3 1/2 — 4	3 1/2 — 4	72/6	..	..	6 5 0
76,121	Do. 4 1/2 % Cum. Pref. 1—71,106	5	4 1/2 %	4 1/2 %	4 1/2 %	4 1/2 %	4 1/2 — 4 7/8	4 1/2 — 4 7/8	..	..	..	4 12 4
225,000	Do. 4 1/2 % 1st Mort. Deben. Stock ..	Stock	4 1/2 %	4 1/2 %	4 1/2 %	4 1/2 %	104 —107	104 —107	..	..	..	4 4 1
248,000	Do. 3 1/2 % Mort. Deben. Stock Redeem.	Stock	3 1/2 %	3 1/2 %	3 1/2 %	3 1/2 %	83 — 86	83 — 86	85 1/2	..	..	4 1 5
$6,000,000	Mexican Electric Light Co. 5% 1st Mtg. Gold Bnds	100	5 %	5 %	5 %	..	86 — 87	85 — 86	..	..	..	5 14 11
18,695,000	Do. Light and Power Co., Ltd., Common ..	$100	..	..	3 1/2 %	..	80 — 82	79 — 81	80 1/2	..	—1	4 6 5
$3,400,000	Do. do. 7% Cum. Pref. Stk.	Stock	..	..	7 %	7 %	103 —105	103 —105	103 1/2	..	..	6 13 4
12,000,000	Do. do. 5% 1st Mtg. Gold Bnds.	100	..	..	5 %	5 %	91 — 93	91 1/2 — 93 1/2	93 1/2	92	+ 1/2	5 8 1
250,000	Midland Electric Corporation, 4 1/2 % 1st Mort. Deb.	100	4 1/2 %	4 1/2 %	4 1/2 %	4 1/2 %	97 — 99	97 — 99	..	..	..	4 10 4
130,491	Newcastle-on-Tyne, 1 to 137,500	5	5 %	5 %	2 1/2 %	..	4 1/4 — 4 3/8	4 1/4 — 4 3/8	..	..	..	2 14 0
137,500	Do. 5 % Pref., 1 to 137,500	5	5 %	5 %	5 %	5 %	4 3/4 — 4 7/8	4 3/4 — 4 7/8	..	..	..	5 2 7
150,000	{North Metropolitan Electric Power Supply Co.,} 5 % Mortgages (Red.), Nos. 1 to 1,500}	100	..	..	..	5 %	99 —101	99 —101	..	..	..	4 19 0
10,853	Notting Hill Electric Lighting	10	7 1/2 %	7 1/2 %	7 %	..	11 3/8 — 12 1/8	11 3/8 — 12 1/8	11 3/8	11 3/8	..	5 9 10
20,000	Oxford, 1 to 96 and 407 to 20,316	5	7 %	7 %	7 %	7 %	6 3/4 — 7	6 3/4 — 7	..	..	..	5 0 0
119,894	River Plate Elcty. Co. Ord. Nos. 1 to 120,597 ..	1	2 1/2 %	6 %	8 %	9 %	2 3/16 — 2 5/16	2 3/16 — 2 5/16	..	..	..	3 17 10
100,000	Do. do. 5% Non Cum. Pref. Nos. 1 to 100,000	1	6 %	6 %	6 %	6 %	1 3/16 — 1 5/16	1 3/16 — 1 5/16	22/-	21/10 1/2	+ 3/8	5 1 1
900,000	Do. do. 4% Deb. Stk. Red.	100	5 %	5 %	5 %	5 %	103 —105	103 —105	..	..	..	4 15 8
40,000	St. James' and Pall Mall Electric Light, Ord. ..	5	10 %	10 %	10 %	10 %	8 3/4 — 8 7/8	8 3/4 — 8 7/8	..	..	..	5 15 11
80,000	Do. do. 7 % Pref. 20,001 to 40,000	5	7 %	7 %	7 %	7 %	6 3/4 — 7	6 3/4 — 7	..	..	..	4 14 11
120,000	Do. do. 3 1/2 % Deb. Stock Red. ..	100	3 1/2 %	3 1/2 %	3 1/2 %	3 1/2 %	86 — 88	86 — 88	..	..	..	3 19 7
12,000	Smithfield Markets Electric Supply, Ord.	5	Nil	Nil	Nil	Nil	1 1/2 — 2	1 1/2 — 2	..	..	..	Nil
95,000	South London Electric Supply, Ord.	4	5 %	4 %	5 %	5 %	3 1/2 — 3 3/4	3 1/2 — 3 3/4	..	..	..	6 9 0
120,100	Do. do. 5 % 1st Mort. Deb.	100	..	..	5 %	5 %	101 —104	101 —104	..	..	..	3 16 11
120,000	South Met. Elec. Lt. & Power, Ord.	1	2 1/2 %	2 1/2 %	2 1/2 %	..	1/2 — 5/8	1/2 — 5/8	..	..	..	5 0 0
142,988	Do. do. 7 % Pref.	1	7 %	7 %	7 %	7 %	1 — 1 1/8	1 — 1 1/8	21/8	..	..	6 4 5
294,520	Do. do. 4 1/2 % 1st Deb. Stk.	100	4 1/2 %	4 1/2 %	4 1/2 %	4 1/2 %	98 —101	98 —101	..	..	..	4 9
80,000	Urban Electric Supply, Ord.	5	5 %	5 %	5 %	..	1/2 — 1	1/2 — 1	..	..	..	20 0 0
60,000	Do. do. 5 % Cum. Pref.	5	5 %	5 %	5 %	..	2 — 2 1/2	2 — 2 1/2	..	..	..	10 0 0
275,000	Do. do. 4 1/2 % 1st Mort. Db. Stk. Red.	100	4 1/2 %	4 1/2 %	4 1/2 %	4 1/2 %	79 — 81	79 — 81	..	..	..	5 11 1
208,000	Victoria Falls Power Co., Pref. Nos. 1 to 208,000 ..	1	..	..	5 %	..	3/4 — 7/8	3/4 — 7/8	..	..	..	5 14 3
100,00	Westminster Electric Supply, Ord.	5	12 %	10 %	10 %	10 %	8 1/2 — 8 3/4	8 1/2 — 8 3/4	..	..	— 1/2	5 14 3
51,270	Do. do. 4 % Cum. Pref. Reduced from 5% since 31st Dec., 1908)	5	4 1/2 %	4 1/2 %	4 1/2 %	4 1/2 %	5 — 5 1/4	5 — 5 1/4	5 5/16	5 1/16	..	4 1 10

* Unless otherwise stated, all shares are fully paid. † Quotations on Liverpool Stock Exchange.

(Bank rate of Discount 3 per cent., June 9th 1910.

TRADE STATISTICS OF THE STRAITS SETTLEMENTS, 1908.

The following statement showing the imports of electrical and other materials into the various Straits Settlement ports in 1908 is taken from the recently issued trade statistics; the figures for 1907 are given for purposes of comparison, and notes of any increases or decreases have been added:—

Imports into Singapore.

	1907. Dollars.	1908. Dollars.	Increase or decrease. Dollars.
Electrical goods (not otherwise shown).—			
From Great Britain ...	not shown separately.	43,000	—
„ British India ...		7,000	—
„ Belgium ...		2,000	—
„ Germany ...		2,000	—
„ Italy		3,000	—
„ Other countries		1,000	—
Total ...	—	58,000	—
Gas and electric lighting materials.—			
From Germany	3,000	2,000	— 1,000
„ Great Britain	179,000	130,000	— 49,000
„ United States	24,000	11,000	— 13,000
„ Other countries ...	42,000	2,000	— 40,000
Total ...	248,000	145,000	— 103,000
Telegraph and telephone materials.—			
From Belgium	18,000	3,000	— 15,000
„ Germany	52,000	17,000	— 35,000
„ Great Britain	105,000	543,000	+ 438,000
„ Other countries ...	8,000	8,000	—
Total ...	183,000	571,000	+ 388,000
Tramway and railway materials.—			
From Belgium	67,000	84,000	+ 17,000
„ Germany	7,000	—	— 7,000
„ Great Britain	144,000	502,000	+ 358,000
„ Australia	—	46,000	+ 46,000
„ Other countries ...	29,000	27,000	— 2,000
Total ...	247,000	659,000	+ 412,000
Machinery.—			
From Belgium	16,000	65,000	+ 49,000
„ Denmark	21,000	65,000	+ 44,000
„ France	31,000	7,000	— 24,000
„ Germany	72,000	45,000	— 27,000
„ Holland	36,000	27,000	— 9,000
„ Great Britain	1,085,000	1,409,000	+ 324,000
„ United States	103,000	56,000	— 47,000
„ Other countries ...	90,000	116,000	+ 26,000
Total ...	1,454,000	1,790,000	+ 236,000
Lamps and lampware.—			
From Belgium	19,000	4,000	— 15,000
„ Germany	248,000	128,000	— 120,000
„ Great Britain	113,000	65,000	— 48,000
„ United States	26,000	18,000	— 8,000
„ Other countries ...	54,000	29,000	— 25,000
Total ...	460,000	244,000	— 216,000

Imports into Penang.

Electrical goods (not otherwise shown).—			
From Great Britain	not shown separately	12,000	—
„ Germany		11,000	—
„ Other countries ...		1,000	—
Total ...	—	24,000	—
Gas and electric lighting materials.—			
From Germany	39,000	3,000	— 36,000
„ Great Britain	46,000	30,000	— 16,000
„ United States	1,000	—	— 1,000
„ Other countries ...	11,000	—	— 11,000
Total ...	97,000	33,000	— 64,000
Telegraph and telephone materials.—			
From Great Britain	—	1,000	+ 1,000
„ Singapore	1,000	—	— 1,000
Total ...	1,000	1,000	—
Railway and tramway materials.—			
From Belgium	6,000	21,000	+ 15,000
„ Great Britain	4,000	49,000	+ 45,000
Total ...	10,000	70,000	+ 60,000
Machinery.—			
From Belgium	13,000	1,000	— 12,000
„ Germany	37,000	26,000	— 11,000
„ Great Britain	444,000	260,000	— 184,000
„ Singapore	38,000	—	— 38,000
„ United States ...	12,000	6,000	— 6,000
„ Other countries ...	11,000	13,000	+ 2,000
Total ...	555,000	306,000	— 249,000
Lamps and lampware.—			
From Austria	4,000	2,000	— 2,000
„ Belgium	4,000	2,000	— 2,000
„ Germany	43,000	31,000	— 12,000
„ Singapore	3,000	—	— 3,000
„ Great Britain	33,000	32,000	— 1,000
„ Other countries ...	6,000	5,000	— 1,000
Total ...	93,000	72,000	— 21,000

Imports into Malacca.

Gas and electric lighting materials.—			
From Singapore	1,000	—	— 1,000
Total ...	1,000	—	— 1,000
Telegraph and telephone materials.—			
From Great Britain	1,000	2,000	+ 1,000
„ Other countries ...	—	1,000	+ 1,000
Total ...	1,000	3,000	+ 2,000
Tramway and railway materials.—			
Total ...	—	4,600	+ 4,600
Machinery.—			
From Singapore	9,000	—	— 9,000
„ Germany	—	12,000	+ 12,000
„ Great Britain	5,000	5,000	—
„ Other countries ...	—	1,000	+ 1,000
Total ...	14,000	18,000	+ 4,000
Lamps and lampware.—			
From Singapore	6,000	—	— 6,000
„ Other countries ...	1,000	—	— 1,000
Total ...	7,000	—	— 7,000

N.B.—The rate of exchange for the dollar = 2s. 4d.

Synthetic Rubber.—We have no wish to throw cold water on the attempts of chemists to solve the problem of the synthetic production of rubber, nor are we actuated as holders of rubber shares, by a desire to uphold the inflated price of the natural product. We do not like cheap sneers to be thrown at the industry we represent, and therefore would impress upon manufacturers and others the futility of announcing, or permitting the announcement of, sensational discoveries until they are perfectly sure of their grounds, and have fully considered the commercial possibilities of their inventions. This tendency for premature publication has been growing of late years. It is with a feeling of disgust that we have noticed the notoriety associated with radium and its possibilities. No limits of imagination have been placed on the potentialities of radium, which is going to make boundless fortunes for trusting investors in certain undertakings. Rubber synthesis, too, has also been repeatedly "boomed"—to sink back into obscurity. It is this glorification of half-truths that leads us to utter this protest, and we again bring forward this so-called golden rule of journalism—which we fear is sadly falling into disuse—"first verify the facts."—*The Chemical Trade Journal.*

Lignite as Station Fuel.—Brown coal or lignite, the production of which in Germany now exceeds 60,000,000 tons per annum, is to be used on a large scale in connection with the supply of electricity to the city of Cologne. According to an agreement which has been concluded between the Municipal Council and the Rhenish Co. for lignite mining and briquette manufacture, the latter has undertaken as from April 1st, 1912, to supply high-pressure three-phase current to the city in sufficient quantity to fulfil all purposes. The present municipal works and those of districts to be incorporated can be continued and improved by the city, which is also at liberty to close them either wholly or partly and obtain the entire supply from the company. The agreement has a currency of 30 years. The charges will be according to a sliding scale of maximum rates which cannot be increased, but which are capable of reduction if the cost of production is lowered by the introduction of new inventions during the period of the agreement. If the company should supply to other parties energy at lower prices or on more favourable terms than those fixed for the city, the latter will be entitled to similar consideration for the remainder of the period. The city has also been promised an interest in the company's share capital and representation on the board of directors.

DEPRECIATION.

By GEORGE JOHNSON.

The important subject of depreciation is ever in evidence, and is inseparable from the operation and administration of electrical and other industrial undertakings. A comprehensive term, denoting a shrinkage in value, its inexorable requirements are forced perpetually upon our attention. The primary and all-sufficient deterrent to adequate provision for wear and tear is the narrow margin that too frequently occurs between revenue income and expenditure in favour of the former after providing for any debenture charges; it constitutes an effective barrier to the desideratum of a systematic appropriation to depreciation or renewal account, and may be said to be responsible for the more or less haphazard sums assigned thereto from time to time. This means that in practice depreciation allocations are governed by the surplus available for dividend purposes, though the former represent losses, and are therefore a charge against profit and loss before arriving at what is generally termed the net profit available for allocation and distribution. A depreciation account or fund means an account or a fund for the provision of wasting assets, rendered necessary by the fact that reparation for such waste is beyond the power and effect of ordinary repairs and maintenance—a provision for the maintenance of the subject to which either may relate. It is a condition precedent to the attainment of a satisfactory state that there should be a reasonable credit margin on profit and loss account, so that in anticipating the inevitable, previous practical preparation may be made therefor. Confronted by the justifiable dividend demands of shareholders on the one hand, and ever-increasing wear and tear on the other, with the usual limitations upon the excess of income over expenditure on revenue account, portends usually the creation of an impoverished situation, and undertakings so circumstanced are precluded from rendering that degree of satisfaction to what may perhaps be described as opposing elements.

The pursuance of such trend of observation might direct our attention to an investigation of the circumstances attending the genesis of the undertaking concerned, to considerations of capitalisation—watered and otherwise, and the composition of the capital expenditure, to unremunerative sections or routes, to contrasts of the outcome of practical performance with original estimates, and the inducements (if any) that were held out in the prospectus, and offer—public or private—for subscriptions on capital account, and other incidental materials. Some will tell you, however, that they are already seized with the knowledge and importance of these matters, that they have but little bearing upon the existing position of some unpromising undertakings, and that we should look for amelioration or betterment to the abolition or amendment of the municipal veto and the increase of fares. But these considerations are beyond the scope of this article. Certainly in many cases, as at present constituted, it had been better from the shareholders' point of view, because of the meagre returns that they have received if some undertakings had been relegated in their proposition stage to the unremunerative category of ventures. This may be a pessimistic view, but it is true of some cases.

Digressing, there is a wide divergence between tramway or street railway finance and conditions, and those of British railways, just as there is between the latter and American railways. We are told that in the early days of railways in the States the *modus operandi* was to commence the building of a line and send an engine with a barrel of lager beer ahead as far as it would go. Then deposit a barrel somewhere in the prairie. A bar and some Germans or Prussians gathered round it, and soon there was a small colony with a church and a school-house. Pushing the line ahead for five or six miles, the beer barrel business was repeated, and, by the time the whole road was ready, there was a nice little population along the line. This, however, we must not take too seriously. It used to be the practice in America in those days to bond the undertaking for the entire construction cost, and then to issue shares to the members of the promoting syndicate as a bonus, so that the shares were really so much "water." Of course, if the undertaking proved to be successful, the promoters derived a huge profit. If, on the other hand, it happened to be a failure, they lost nothing, the only persons liable to adversity being the bondholders.

Mr. Van Oss tells us that the construction companies were usually composed of members of the board and their friends. A Vanderbilt started the South Pennsylvania railroad to compete with the Penna. The cost of this road was found to be actually $6,500,000, and a responsible contractor had offered to construct it at that figure. Yet a construction company composed of Vanderbilt's clerks received $15,000,000 to complete it, and the syndicate of capitalists which supplied this money got $40,000,000 in bonds and shares. "Water" or inflated capital would appear also to have been created by the payment of stock dividends in scrip or shares. In 1868 a distribution of 80 per cent. on the shares of the New York Central Railroad Co. was effected in this manner. The Reading paid a scrip dividend of 10 per cent. in 1846 and 12 per cent. in 1847, whilst between 1867 and 1876 upon a capital of $34,200,000, already fictitious to the extent of probably more that one-half, $15,700,000 was paid in dividends, mostly in scrip. And so we may proceed.

Frequently, the sums intended for the depreciation or renewal of the permanent way are measured in terms of a rate per car-mile, ½d. or 1d. perhaps, such sums being charged against income and credited to a depreciation or renewal account, which bears the burden of the renewals as they occur. They may be invested in part, sometimes, outside the business, but it is not a prevalent practice.

As distinguished from general consumable stores, it is desirable to open a loose tools and plant account, charging all items of that nature thereto. At the end of the financial year a statement may be prepared showing the value of the unused tools in stock at cost, and valuing those in use. The difference between the total of such a statement and the total or balance of the account, will require to be written off; this may be with propriety distributed *pro rata* over various capital and revenue accounts upon which wages and materials have been expended during the year.

A register or record of all fixed plant and machinery should be kept with dates and cost of purchase, as well as cost of installation, and of additions thereto. Such capital expenditure may be depreciated upon the diminishing balance principle, which provides for a decreasing reservation on account of depreciation or renewal when repairs and maintenance are likely to show an upward deflection by reason of age and increasing wear and tear. This principle may be exemplified as follows, assuming small figures, which are sufficient to illustrate the method and result of working. Let us state that it is required to reduce £7,360 to £5,000 in eight years in the manner described. Here the rate will be, for all practical purposes, 4·7179 per cent., viz. :—

Let y be the ratio of reduction to £1.
Let x be the interest per annum upon £1.

$7{,}360\,(1+x)-7{,}360\,y$ = balance at end of first year,
i.e., $7{,}360\,(1+x-y)$ = balance at end of first year;
$\therefore\ 7{,}360\,(1+x-y)^2$ = balance at end of second year;
and $7{,}360\,(1+x-y)^8$ = balance at end of eighth year;

$$\therefore\quad (1+x-y)^8 = \frac{5{,}000}{7{,}360} \text{ and } 1+x-y = \left(\frac{5{,}000}{7{,}360}\right)^{\frac{1}{8}}$$

Log. 5,000 = 3·69897, &c.
Log. 7,360 = 3·86687
Difference $\bar{1}\cdot832092$
$\div 8 = \bar{1}\cdot979011$
$\therefore 1+x-y = \cdot952821,$
$y-x = \cdot047179,$
or 4·7179 per cent.

We may prove it as below, viz. :—

7,360	
347·23744	
7,012·76256	Amount at end of first year;
330·85512	
6,681·90743	" " second year;

and so on, when there should be a balance outstanding at the end of the eighth year of £5,000.

Separate records for depreciation purposes should be kept of rolling stock and its equipment, cables, and overhead equipment, and treated on similar lines.

If the company is the freeholder of the land upon which the buildings are erected, but slight provision for depreciation will in most cases be sufficient, subject, of course, to efficient repairs and maintenance.

Other (perhaps less frequent) methods of depreciation are by sinking fund or annuity.

The usual signification of the term sinking fund is the investment of money for some specific purpose, the common applications of a sinking fund in general terms being in connection with the redemption of debentures, bonds, and the restoration of assets susceptible to depreciation, such as machinery, plant, construction works, and other forms of expenditure upon intended remunerative objects. It is not the sinking fund, however, that redeems a liability, but the proportion of excess of assets over liabilities which it represents, the sinking fund being a reserve which may be applied towards the extinction of the book value of the asset, or against which renewals may be charged, according to the precise nature of the particular expenditure to which the sinking fund, or, correctly, the reserve, has reference, as we shall presently show. No precise mode of procedure need be observed, as the sums invested and the period of investment may be regular or irregular, whilst the sums set aside may be invested outside the business creating the fund, which is a liability, and be subject to the influence of interest, or they may be invested in the business. The definite form depends somewhat upon the object in view, the resources available to attain it, and the consideration of investment; but after all, a sinking fund is associated popularly with an investment outside the business creating it. It will be remembered that in accounts of parliamentary companies, such as gas, water, electric lighting, railways and other concerns, the depreciation is shown separately in the depreciation section, and not as a deduction from the capital expenditure, the latter account being constructed by showing on the one side the capital expenditure, and on the other the capital (share and otherwise) contributed to the undertaking, the balance being transferred to the general balance-sheet in the same way as the balance (if any) of the depreciation account, to which we have referred. Of course, a sinking fund for depreciation is not a reserve fund, and the use of the term "fund," in some instances, is open to objection.

In some cases redemption of capital is effected by means of capital redemption policies, sometimes known by the general appellation of leasehold and sinking fund assurances, the object being to secure a specific sum at the expiration of a given time, the policy-holder in consideration therefor paying either a single or an annual premium during the term. The purposes for which these policies are required embrace, *inter alia*, depreciation, redemption of debentures, provision of the difference between the capital invested in bonds and the amount repayable at maturity, provision for dilapidations upon the expiration of leases, &c. The salient features of such policies, therefore, are that a definite sum is undertaken to be paid by the assured at a definite time provided the necessary contribution or contributions are maintained, and that at any intermediate period, with probably the exception of the initial year, they possess a surrender value. The rate of interest accumulation may be 3 per cent. The surrender value may consist of the whole of the premiums paid after the first year, with compound interest at 3 per cent., less a deduction of, say, 7½ per cent. in the case of annual premiums, and in the case of a single premium the accumulation of that sum at 3 per cent., less 7½ per cent. In some instances, when payment of the premium has not been maintained for a certain time, the tender of the arrears with interest at, say, 5 per cent., may be accepted by the assured.

Let us see how such a sinking fund works in both cases, assuming a brief period and small sums, with the object of avoiding figures as much as possible. Take an asset of £6,500 with a break-up value of £500 at the end of three years, and a 2 per cent. sinking fund. Here we have :—

$$\frac{(1 + \cdot02)^3 - 1}{\cdot02} = 3\cdot06040, \text{ and}$$

$$\frac{1}{3\cdot06040} = \cdot326755$$ the annual sinking fund for £1. For £6,000 (6,500 − 500) we have $\cdot326755 \times 6{,}000 = 1{,}960\cdot530$ annual sinking fund. Now—

	1,960·530 first payment.
	39·2106 interest at 2 per cent.
	1,999·7406
	1,960·530 second payment.
	3,960·2706
	79·2054 interest at 2 per cent.
	4,039·4760
	1,960·530 third payment.
Say	6,000

The *pro formâ* entries are as below, assuming realisation of fund and break-up value.

CAPITAL.

		Sundries	£6,500

MACHINERY.

Sundries	£6,500		Sinking fund ...	£6,000
			Cash	500

CASH ACCOUNT.

Sundries	£6,000		Investment ...	£1,960·530
,, ...	500		,, ...	1,960·530
			,, ...	1,960·530

INVESTMENT.

Cash	£1,960·530		Cash	£6,000
,, ...	1,960·530			
,, ...	1,960·530			
,, (interest) ...	39·2106			
,, ,, ...	79·2054			

PROFIT AND LOSS.

Sinking fund ...	£1,960·530		
,, ...	1,960·530		
,, ...	1,960·530		

SINKING FUND.

Machinery... ...	£6,000		Profit and loss	£1,960·530
			,,	1,960·530
			,,	1,960·530
			Interest ...	39·2106
			,, ...	79·2054

In this case the interest follows the fund. On the annuity principle, which we shall observe presently, the interest follows profit and loss.

Let us assume, merely for illustration, the issue of £6,000 4½ per cent. mortgage debentures at par, redeemable, say, in three years (with a view to curtailing figures), with a 2 per cent. sinking fund, the proceeds of the issue being expended upon the purchase of machinery. We have—

CASH ACCOUNT.

Debentures	£6,000		Machinery	£6,000
Investments	6,000		Debenture interest (3 years)	810
			Investment (3 years)	5,881·590

DEBENTURES.

		Cash	£6,000

MACHINERY.

Cash	£6,000				

PROFIT AND LOSS.

Cash (deben. int.) ...	£810				
Sinking fund (3 years)	5,881·590				

INVESTMENT.

Cash	£5,881·590		Cash...	£6,000
Interest	118·416			

SINKING FUND.

Profit and loss	£5,881·590
Interest	118·416

Here the balance of the sinking fund will be transferred to the credit of machinery account or used as a reserve, and the realisation of the investment provides the necessary amount for the redemption of the debentures.

It is frequently necessary to calculate what, from the investing or financing point of view, would be the return on such transactions. Assuming £10,000 debentures of £100 each, bearing interest at 7 per cent., say issued at 100 and redeemable in five years at £95, interest payable half-yearly, the half-yearly return in respect of each £100 would be

3·0640 per cent., whilst the company would require to provide a half-yearly sum of £828·400 for the redemption of the £9,500 repayable at the end of the term. From the investing or financing point of view, the account in terms of £100 would be as follows :—

DEBENTURE ACCOUNT.

To cost	... £100	Redemption of (100 — 95) = ·4360 × 10 ...	£4·360
		Interest yielded by redemption fund ...	640
		Amount due on redemption	95
	£100		£100

INTEREST ACCOUNT.

True yield at 3·0640 per cent. (3 0640 × 10)	£30·6400	Interest receivable for 10½ years (3·5 × 10) ...	£35
Balance transferred to debenture account, being equivalent to the sums paid into the redemption fund, viz. (·4360 × 10)	4 3600		
	£35		£35

If it be required to redeem the capital within a given period, and also at the end of the term to provide for interest on the capital sunk, we employ the annuity method. The principle may be briefly noted. Using small sums, the redemption of £100 in five years at 5 per cent. by the annuity method involves an annual outlay of £23·0979 for the period named. The amount of £1 in five years at 5 per cent. = 1 2763 × 100 = 127·63. The amount of £1 per annum in five years at 5 per cent. = 5·5256 and $\frac{127·63}{5·5256}$ = £23·0979 the periodical sum required for the redemption fund. In this instance the interest, of course, does not follow the fund.

THE REGISTERING TICKET PUNCH.

By LIONEL E. HARVEY.

Punch, brothers, punch with care,
Punch in the presence of the passengare.

THAT'S just the point! and I venture to think that if tickets were always punched according to Mark Twain's most explicit instructions, there would be no need of any registering punch at all. But they're not—and that's where the trouble comes in—and also the dummy ticket—although, as a matter of fact, the dummy ticket is usually followed by the trouble—for the conductor.

But, putting this unseemly levity to one side, I would ask these questions :—

1. What are the objects attained by the use of a registering punch?
2. Can the registers always be relied upon?
3. What happens if they can't?
4. Is the labour and cost of keeping records and the extra cost of the punch justified by the results achieved?

1. What are the objects attained by the use of a registering punch? It would be well, perhaps, to look first at the method of procedure. The punch is issued to the conductor, with the clippings box empty, and the register is entered in the record book and on the way-bill in the presence of the conductor, and then locked. When the conductor pays in, the register is again noted and entered on the way-bill, and in the book. When the way-bill is made up the register should tally with the total tickets sold. If it does not do so, then either it reads too few, which should show that not all the tickets sold have been punched, or it reads too many, which should show that some tickets have been punched twice, or that dummy tickets have been issued, and this latter is the object of the register—to detect the seller of the dummy ticket, and this bring us to :—

2. Can punches always be relied on, are they absolutely infallible? I think not. Perhaps when they are used deliberately, gently, carefully, and slowly, an error would not occur once in ten thousand times; but do these conditions hold good under practical service? No; not one of them; as a matter of fact, no part of a tramway equipment has to stand such rough usage as the ticket punch, and this in spite of the delicacy of its construction. In the case of a packed car on a wet night on a route with numerous stops, has the conductor time deliberately and carefully to punch every ticket? No! In the bustle and hurry of his multifarious duties, is it any wonder that sometimes the ticket is not far enough in the jaw when he gives the lever his usual mighty wrench? The centre pin may or may not have just caught the edge of the ticket, but he's not sure, and he gives it another gentle squeeze, and it's ten to one he has registered twice for the one ticket. Or, perhaps, he pulls the ticket out of the jaw before he has released the lever, and a little piece of ticket is left in, and when he comes to punch the next ticket the little piece gets the punch mark and the ticket doesn't, and has to be punched again, and then just as he is about to punch the next ticket someone pulls his coat tail and asks to be put down at the "Pig and Whistle," and he forgets to press the lever, and the ticket is handed to a passenger not punched at all. Oh, yes, I know it's absolute carelessness, and it's not what he gets his wages for, and there are plenty of men who *can* do better, and would be glad of his job, but are there *no* excuses for him when he finds at the end of his day's work that his register tells him he owes the cashier about a shilling?

Now let us look at 3. What happens if the register cannot be relied upon? The answer to this is obviously that, unless it is absolutely infallible, it is not right or fair to hold the conductor responsible for its record, and it is a fact that in some towns, where there are registering punches at the present time, the men have definitely refused to be bound by the register, and yet the registering punches are still in use, and the records are religiously entered up in the duly appointed and ponderous tomes.

I once asked the cashier of a certain system where such conditions apply, what was the use of the records of the register, and he replied—"Well, they are not much good, except to tell whether a man who says his box was not made up properly, and that he had a 50 pack missing, was telling the truth or not!"

I replied, "What would you do if the register *did* record 50 too few, and the man disputed it?" "Oh! we should then count the clippings" and that is just the point, you *can* count the clippings whether there is a register or not; and if this is the only reason for having a registering punch, then the answer to (4) is *no*—for if a man shows 4s. 2d. short in his cash, and says there was a pack missing, then the clippings can be counted—granted that this is rather a large order, and has to be carried out with much care, still, allowing for personal error, the results will tell whether there are 50 short or not, and a man who periodically affirms that his box is incorrectly made up can very soon be brought to book.

As regards (4) Do the results achieved warrant the extra cost of the registering punches, the necessary records and the labour entailed? This cost is no inconsiderable item; it may, on a moderate sized system, amount to, say, £50 in a year, and what are the results gained by this expenditure?—perhaps half-a-dozen back-sliders are brought to book. But would they not have been detected without this extra outlay? I am strongly of the opinion that they would, for if a man is made responsible for his shorts, as shown by the ticket pack numbers on his way-bill, and if there is an adequate system of inspectors, then the dishonest conductor is sure to give himself away sooner or later, without the aid and the extra cost of what one might almost term a mechanical "Sherlock Holmes."

But apart altogether from the above considerations, there is another aspect of the case, which has only cropped up of late years with the growth of travelling facilities, by inter-running systems and transfers.

Take first the case of a transfer ticket, which entitles a passenger to change at certain points: the conductor who issues the ticket of course punches it, and it is registered; what does the conductor of the second car do when the

passenger presents the transfer to him—does he punch it? Oh no! For he would then have a register on his punch, and no penny in his bag to show for it. So he tears a little bit off it, or he marks it with a blue pencil, or even in some cases he is provided with a pair of snips. The latter method is, of course, by far the best, but necessitates the supply of the snips for the sake of the register, and entails more labour on the part of the conductor.

Again, take the workman's return ticket, the same method holds good here—I know that on some systems exchange tickets are issued, which are given by the conductor of the second car and punched as usual, but surely this is a cumbersome and costly method to adopt, when another punch mark on the original ticket is all that is required.

Then again, look at the case of some systems—my own is one of them—where a workman can purchase in the morning a double return ticket (dated), which enables him to return home to his dinner at mid-day.

This ticket must be properly checked, and to do so requires a punch mark when issued, a punch mark when going to dinner, another when returning from dinner to work, and a fourth when leaving work at night—of course in their appointed sections of the ticket—and for three of these punchings, the different conductors have nothing in their bags to show.

Originally the method in use for these cases was to issue two ordinary return tickets to the workman in the morning and to punch one only at that time, and then the passenger could use the second ticket for the third and fourth journeys during the day—the conductor giving an exchange ticket for the second and fourth journeys; but this system is clumsy in the extreme, and open largely to fraud on the part of the passenger, as he can hand the second ticket to anyone he likes to travel with in the afternoon or evening.

There are also many cases on through-running systems where similar conditions hold good.

In my opinion, in all these instances the work is simplified and cheapened, and the already burdensome duties of the conductor are lightened, by abandoning the register punch, for in all of them, some out-of-the-way method has to be adopted, entirely for the sake of getting the register to tally with the number of tickets sold.

To sum up, I would advocate a punch with a clippings box and a gong to attract the notice of the passenger, when the conductor is in the act of punching, and, in fact, a punch similar in all respects to the present well-known ones—but *without the register*. I am quite convinced that it is unnecessary, costly, and gives generally more trouble than it is worth.

CRANK TROUBLES.

[COMMUNICATED.]

In engines of the reciprocating type, particularly in large sizes where the crank has to be built up, that is to say when it cannot be forged solid, trouble may occasionally arise due to a fracture of the web, or to a loosening taking place between either the pin or the shaft and one of the connecting rods. If such a thing should happen, it is not always possible to shut down the engine for a long period until a new crank is obtained, and, indeed, it is hardly true economy to go to the expense of a new crank unless every effort has been made to ascertain whether the old one can be repaired. Perhaps, therefore, a few hints as to the way to deal with such trouble may be of interest.

Suppose, for example, that, through the racing of the engine or some other cause, the crank web becomes loose at the point where it is fixed to the shaft. It will be seen that at this part there is considerable torsional strain, and unless the web has been very carefully shrunk on to the shaft trouble is likely to ensue. Cases of this sort have occurred when the holes in the web have been bored a shade too large before being shrunk on to the pin. The best way of dealing with a job of this sort, whatever may be the cause, is to stop the engine as soon as possible, bring the crank on to its bottom centre, and get the connecting rod and brass slung up out of the way. The turning gear of the engine should be put in gear in order to prevent the engine from turning over slightly while work is going on. The next thing is to drill four or five holes, say, 1 in. in diameter, and about 4 in. deep, into the shaft, so that the hole is half in the shaft and half in the web. These holes should then be tapped with a taper tap only, and the requisite number of bolts should be screwed in tightly, the heads being then cut off. It will often be found that in such shafts there are one or two dowel-pins, as shown in the sketch, fig. 1, and these should be secured in just the same way by drilling small holes half in the pin and half in the web, which holes should be taper tapped, and a small bolt screwed in very tightly, with the head finally cut off. It will be found that this repair will keep the crank in position in a very satisfactory way until a suitable time arrives to get a new crank.

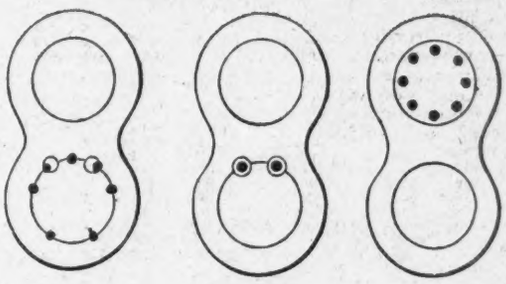

Fig. 1. Fig. 2. Fig. 3.

Another method of securing the dowel-pins holding the crank web to the shaft, which is very useful under certain circumstances where the dowel-pins themselves work loose, is to drill a small hole down the centre of each pin, say a $\frac{3}{8}$-in. tapping diameter hole for a 1-in. dowel, and these holes should run to a depth of, say, 6 in. Three-eighth pins should then be made for these holes, slightly larger than the diameter of the hole, and having a slight taper. The pins should be made of tough steel, and should be driven hard into the holes down the centre of the dowel-pins. The effect of this is to swell the dowel-pins out around their external circumference, and to make them a tight fit in the dowel holes, as shown in the sketch, fig. 2. This method of going to work is much easier and simpler than the former arrangement, but care should be taken to see that the slackness of the web is not due to an insufficient fit between the shaft and the web itself, but only due to slight slackness of the dowel-pins, otherwise the latter will shear sooner or later; also the dowel-pins must not be too slack in the holes, or else the attempt at expanding them will split the dowels.

Where the trouble is to be found in the joint between the web and the crankpin, the matter is not quite so serious as where the shaft is concerned, as there is not so much danger of shearing and the parts slipping relatively to one another. It is, however, very necessary that a tight joint be maintained, because the whole of the power from the high and intermediate-pressure lines on a triple-expansion engine would be transmitted through the material of the crank on the low-pressure line, and any weakness therein would probably mean that one part of the shaft would turn relatively to the rest, and very serious trouble might follow. Either of the methods detailed above might be applied with advantage to the junction of the crank-pin and web, but a very neat and interesting repair may be detailed, which is carried out as follows:—A series of holes of, say, $\frac{7}{8}$ in. diameter, should be drilled in the pin fairly close to its outside radius, the depth of the drilling being carried to the thickness of the crank web. By means of a reamer these holes should then be slightly tapered, and pins of tough steel, slightly larger than the diameter of the holes, should be made and tapered to suit the hole. These should then be driven hard in so as to cause the pin to swell out and grip the web tightly. The situation of the holes in the pin should be between the static size of strength diameter and the outside or lubricating diameter. For crank-pins on triple engines their diameter should be about three times the diameter of their static strength. The fact of crank-pins becoming loose in the web is usually due either to the original contraction of the web upon the pin being carried out badly, or else to

the crank-pin having at some time or other run very hot owing to insufficient lubrication or the adjustment of the connecting rod big ends being carried out too finely.

About the most awkward thing that can happen upon a built-up crank is that the web itself should crack, as shown in fig. 4. This may occur either owing to a bad forging or through the heavy strain imposed by a sudden alteration of load or the racing of the engine. Immediately such a defect, even in its incipient stages, is detected, the engine should at once be put out of commission. On large low speed engines

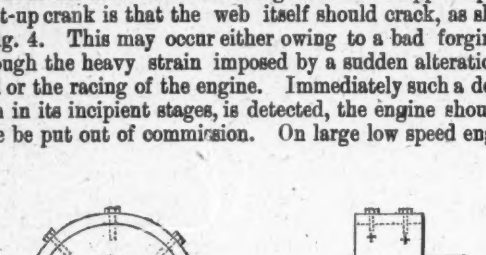

Fig. 4.

it is quite possible for such a crack to be detected even when the engine is running, if the driver is a careful man and keeps his eyes open when he is feeling round the bearings, but on small high-speed engines it is practically impossible to notice such a defect, except when the engine is being overhauled and is at a standstill. In the particular instance shown in the sketch, the crack when the engine was stopped was seen to be about $\frac{1}{8}$ in. open on the surface and to extend into the web for a distance of about 7 in., and it might possibly have been aggravated by any pounding of the big end upon the crank-pin, if this had not been carefully taken up. The way in which this defect was repaired until a new web could be obtained is clearly shown in the sketch. A strip of stout steel plate was cut to a width equal to the thickness of the web, and of a length sufficient to go right round the outside surface of the web. Starting at the top of the web near to the crank-pin it was secured in position by means of tap bolts and brought closely to the shape of the web, being secured by other bolts as shown. These were not drawn up tight until the ends of the plate, which had been turned up at right angles, were drilled and brought together strongly by means of bolts and nuts which put a strain upon the pin tending to draw the partially severed portions of the web together. When this was done the bolts round the surface of the web were tightened up strongly by means of an extra long spanner, and this prevented them from subsequently slacking back. With this arrangement the web ran through safely until a new web could be obtained. A crack of this description is very liable to form if the forging has been carried out incorrectly. The grain of the metal should always run along the length of the web and not across it, and engineers should be very careful to see that this is actually the case. When the web is weak a crack can easily be started by the racing of the engine and an attempt being made to throttle too sharply. It is more particularly likely to occur on the low-pressure web, which, transmitting the power of the other lines, is also liable to receive an extra jar due to the action of steam which has been admitted to the engine before throttling took place and after the load had been thrown off the engine.

The above notes may serve as typical examples of the class of trouble which is likely to occur on the main shaft of a reciprocating engine. Where such an engine is being used in conjunction with an electric light plant, it is very useful to take the precaution of putting between the engine and electric generator a flexible coupling, which reduces to a considerable extent the shocks which are transmitted between the engine and generator.

THE TRAMWAY CONGRESS.

(*Continued from page* 1014.)

Mr. R. S. Tresilian, secretary of the Dublin United Tramways Co., Ltd., provided the Congress with a full and interesting history of his company with which he, and his chairman, Mr. W. M. Murphy, have been associated for so many years.

In 1867, the City of Dublin Tramways Co. obtained an Order in Council for constructing a short line along the left bank of the Liffy, and the southern part of the city, but the old omnibus system continued in sole possession until 1871 when a new company, called the Dublin Tramways Co., began the construction of 17 miles of tramway under a special Act. At the end of that year this company purchased the rights of the original company.

A box rail weighing 53 lb. per yard, spiked to longitudinal wooden sleepers were used, and the track was stone-paved between rails, and for 18 in. on each side. The cost of construction was about £3,550 per mile of single line.

Early in 1872 the first section was opened, with horses as motive power. Between 1875-8 two other companies were formed, which in part entered into competition with the Dublin Tramways Co., but in 1880 the three companies were amalgamated under the title of the Dublin United Tramways Co.

Meanwhile, the sea-coast between the city bounds and Dalkey was being exploited by various tramway companies, the earliest being the Dublin Southern District, which began in 1878 to build a line from a junction with the city lines to Blackrock, and from Kingstown to Dalkey. In 1883 another company filled the gap between Blackrock and Kingstown, but built its line to a gauge of 4 ft. 8½ in., whereas its connections on either side had a gauge of 5 ft. 3 in. Of course, this state of things could not continue for long, and the two companies were amalgamated, and tried an experiment with steam traction, but failed to prove it superior to horse traction under the peculiar conditions which existed.

Between 1895 and 1896 the happy era of electrical working was inaugurated, and the Imperial Tramways Co. found the capital for rebuilding the Dublin Southern line on the overhead trolley system with a uniform gauge of 5 ft. 3 in. The rails weighed 73 lb. per yard, and the gauge was made uniform throughout with the city lines.

The first power station was placed at Ballsbridge, where there is still a car-shed, and a repair shop and stores. A.C. 50-period three-phase current was generated at 2,500 volts, and transformed in motor-generator sub-stations at Blackrock and Dalkey. These stations are retained still with additional machinery.

An attempt by the Dublin Southern Co. to invade the city was followed by amicable negotiations, which led in 1896 to the happy amalgamation of these companies, so that the whole of the tramways within the city, and without it on the southern side, were brought under one management, with the results which we see to-day.

In 1897 the usual process of legalised blackmail had removed municipal opposition to the electrification of all the lines, and from that time until 1900 conversion proceeded steadily, resulting finally in the extinction of the last horse car.

In 1901 the two outlying generating stations at Ballsbridge and Clontarf were shut down, and all supply devolved upon the new Ringsend station, where energy is generated at such a low cost that the directors were able to offer electricity in bulk for lighting and power to the Dublin Corporation at a price at which it is supposed that it would have paid the ratepayers to have bought it; but that is another story.

The Dublin tramways have gone on from strength to strength, until the secretary is able to record that for the half-year ended December 31st, 1909, the receipts amounted to £152,952; the passengers carried were 27 millions, averaging 147,000 per day, and the route mileage worked was 54 miles.

As might be expected with such an old system, there are various types of trucks and motors. Of trucks there are at least 10 different kinds, and of motors five.

To an Englishman it is not gratifying to know that almost every part of the original construction was imported from the U.S.A., even the feeder cables being supplied and laid by an American firm. This arose in great measure from the preliminary tour in America which was made by some of the directors, accompanied by the consulting engineer.

In those pioneer days there was very little chance of learning anything about electric traction in Great Britain, and we were all glad to pick up what we could from the people who had not been hampered by legislation in the development of modern traffic facilities.

Rails of 105 lb. per yard are being used in relaying now, and the company builds its own splendid cars.

Since 1883 a parcels express delivery system has been developed into a really paying business, bringing in last year a net profit of £4,666. In this connection it is interesting to note that the parcels service is worked in conjunction with the Dublin and South-Eastern Railway Co., which has suffered greatly from loss of passenger traffic since the tramways between Dalkey and Dublin were electrified.

At the dinner on Friday, Mr. Sellon was understood to state that, from almost every point of view, the service given by the D.U.T. Co., is unbeaten by any municipal tramway.

A Few Notes on the Reinforced Concrete Lining of the Steel Chimney Stacks at Ringsend Generating Station.

(*Abstract of paper by* P. S. Sheardown, M.I.E.E., M.I.C.E.I., *Electrical Engineer, Dublin United Tramways Co.*)

The generating machinery and general lay out of tramway power stations have at the present time become so standardised that there is very little of novelty to be shown to visitors. There is, however, a novel feature in connection with the construction, or rather reconstruction, of the chimney stacks at Ringsend generating station, which cannot be seen by visitors, and a description of which may prove interesting.

The two chimneys at the power station were built in 1898, and are 225 ft. high. Above the bases they are constructed of steel plates, the bottom 50 ft. being $\frac{5}{8}$ in. thick, the next 50 ft. $\frac{7}{16}$ in. and the top 100 ft. $\frac{1}{4}$ in. thick. They are lined to the top with firebrick, but as it was anticipated owing to the height of the chimney that trouble might be experienced through unequal expansion if the brickwork was set hard against the steelwork, the linings were built independently, leaving a space of about 3 in. between the brickwork and the steel shell.

After some 10 years' life the author became suspicious of the state of the inside surfaces of the plates, and when a careful inspection came to be made, it was found that in the case of the east chimney the plates had rusted away until perforation had occurred in several of them, corrosion taking place entirely from the inside. The exterior of the plates was well protected by paint, and no deterioration had been noticed at the previous painting of the chimneys. It was found that in many parts of both chimneys the plates had rusted away to an extent that materially reduced their strength, and it was obvious that some method of strengthening them and preventing further corrosion would have to be adopted. Finally it was decided to reinforce both the chimneys with a ferro-concrete lining. In the case of the east chimney, which has a diameter at the base of 10 ft. 8 in., it was decided to build a ferro-concrete lining 10 in. thick inside the existing brickwork, reducing the diameter of the chimney to 9 ft. It was decided to remove only the top 20 ft. of the original brick lining, so as to get a bond for this length between the ferro-concrete lining and the steelwork, in order to prevent deleterious gases or damp from getting between the brickwork and the steel shell.

The concrete mixture consisted of three parts of fine sand to one part of cement; the vertical reinforcements consisted of steel tee bars 1¼ in. × 1¼ in. × $\frac{3}{16}$ in., and the horizontal reinforcements of $\frac{5}{8}$ in. round steel. These horizontal rings were put in 18 in. apart, the number of vertical steel bars being 300 at the base, gradually diminishing until at the top there were only 12.

The lining is designed to withstand a wind pressure of 56 lb. per sq. ft. (or a velocity of 112 miles per hour) without help from the original steel shell.

The lining of the first chimney was completed in January, 1909, and has been repeatedly inspected from the inside since being put to work, and so far it seems to stand the heat and other stresses splendidly, as, beyond some small hair cracks which are always noticeable in this class of construction, it is in excellent condition.

A couple of months after being put to work it was noticed that the rivets had pulled out of a horizontal section of the steel chimney about half way up, and that the top half had risen about three-quarters of an inch. This was caused by the greater expansion of the ferro-concrete lining due to its higher temperature compared with the steel shell. The ferro-concrete lining is, therefore, taking the whole of the wind pressure.

When the proposed grouting between the steel shell and the original brickwork lining was put in hand, it was found that, owing to the quantity of soot that had fallen down between the brickwork and shell, a satisfactory job could not be made, and in consequence of this the west chimney, in which the plates were not so much corroded, was differently treated, the whole of the original brick lining being removed and the ferro-concrete lining filled in hard against the steelwork, which enabled the company to have a chimney with an inside diameter of 10 ft. in place of only 9 ft., as is the case with the east chimney, besides allowing a much greater thickness of concrete in the lower part of the chimney stack.

The author is not aware of any other case in which a ferro-concrete stack has been built inside an existing steel one, although reinforced concrete has been used largely in America for chimney construction, and in the case of tall chimneys, this form of construction comes out much cheaper than brickwork. There have been a number of failures, but it appears that they were all due to the neglect of some of the now well-known conditions which are necessary to ensure satisfactory results with all types of ferro-concrete construction.

In order to get a good bond between the concrete and the steel reinforcements, it is absolutely necessary that the concrete should be put in wet.

The design of concrete chimneys differs from the design of brick chimneys, due to the fact that the stresses are met in quite a different way. A brick chimney stands because of its weight, the outside diameter of the base being made so large that it cannot blow over, the stresses in the brickwork being entirely compressive. A reinforced concrete chimney is of much smaller size at the base, and would topple over if it could not sustain a tensile strain. A ferro-concrete chimney must be treated as a beam fixed at one end and loaded on the side on which the wind is blowing, this side being in tension and the opposite side in compression; and it is necessary to have a proper number of vertical steel rods or bars all round the chimney to resist the pull caused by the wind pressure, and steel hoops at intervals to stiffen the vertical steel, and prevent cracks due to difference in temperature between the interior and exterior, and especially to resist the vertical shear which corresponds to the horizontal shear in a beam.

With regard to the effect of exceedingly high temperatures on concrete, there seems to be hardly enough experimental data to decide what effect these will have on concrete after long periods of time, but temperatures up to 700 or 800° F. do concrete no harm; in fact, concrete that has been subjected to such temperatures seems to set particularly hard, and as the boiler gases in most stations are usually nearer 500° F., no trouble should be anticipated from this cause, provided the chimney is properly designed.

The method of constructing a new ferro-concrete chimney is very simple. Two sets of inner and outer moulds are employed which are connected together by means of latches, enabling the moulds to be easily taken to pieces; after the first two sets of moulds, which correspond to the first two courses of concrete, have been filled in, the lower moulds are taken away and placed on the top of the moulds that were above them, the frictional resistance between the concrete and these upper moulds being sufficient to hold the weight of the next course. As soon as this is set the then bottom set of moulds is taken away, and placed on top again, arrangements being made to do this as the construction proceeds from the inside of the chimney, hence no scaffolding is required, except a light one to allow a rough ladder to be erected, and sufficient to support the gear for hoisting the material.

(To be continued.)

RUBBER AND THE V.I.R. CABLE.

[COMMUNICATED.]

Rubber has now for some years been steadily rising in price as the demand has increased, furnishing as it does the basis for the manufacture of the thousand and one indispensable articles, from the cycle and motor tire to the pipe stem. That prices are so high is not only due, however, to the enormous consumption of rubber, but, so it seems to us, to the fact that even with the many sources of supply which have so far been available, the supply has not been nourished and tended as it might have been. In some cases, as everyone knows, rubber has been obtained in a haphazard fashion, and with a constant and ever-increasing drain upon the source and no corresponding replacement or replenishing, there has come the inevitable lessening in the yield. It is now more difficult to obtain the raw material, since those concerned have been reaping much and sowing little. With the present boom in the flotation of so many new concerns to cultivate and produce rubber in various parts of the world, on a scientific and commercial basis, a few years should see the supply less uncertain and more easily obtained, and, consequently, prices ought then to recede to a more rational level.

In the meantime, electrical people see visions of larger wiring bills, for the price of V.I.R. cables and wires always rises in sympathy with that of rubber, and consumers are hard enough to get, in all conscience, even at present. Prime cost has long since ousted rubber insulation from the market for large cables, and, presumably, there is a point at which the vulcanised cable of a smaller size cannot compete with its rivals in the matter of price. For long life and efficiency a vulcanised rubber cable, with a well-tinned conductor and the insulation properly vulcanised, can hardly be surpassed, or even equalled, but cost is a factor which has little respect for old age or long service. We do not suppose that rubber will ever be supplanted for use with the modern form of flexible cord, where the pure rubber strip is simply lapped on in conjunction with silk or cotton coverings, but it does seem that vulcanised rubber must soon give way for small cables, larger than, say, 7/17's, and for such there is now another rival in addition to the paper lead-covered form. We have seen vulcanised bitumen or paper bitumen cables as small as the size mentioned above, and when it is remembered that this class of insulation is, like rubber, non-hygroscopic and needs no other covering than an ordinary tape and braid, it would appear that bitumen is likely to be the insulation of the future, where, up to date, the V.I.R. cable has more than held its own. And bitumen has many good points. After being vulcanised or "cured," it is equal to rubber in homogeneity, and elastic enough to stand all bending to which the ordinary cable is subjected in erection. Exhaustive tests made on

large bitumen cables, such as those used commonly in coal mines, have shown that the insulation is not appreciably affected by considerable pressure, so that decentralisation cannot take place under the normal working conditions. One of the disadvantages, however, of this form of cable is that if not carefully constructed the conductor will be found slightly decentralised, and, of course, should such fault prove to be more than local, there may be a weak place in the cable which will provide the location of a future breakdown.

Jointing affords some difficulty, though not more than is presented by other forms of insulation. Further, a paper-insulated cable sheathed with bitumen, and protected by tape and braid or serving, ought certainly to have as long a life as the best grade rubber cable, since the former is free from the fatal chemical action which in the rubber cable spoils wire and insulation alike.

When copper is dear a fair-sized paper cable always pays for stripping and reinsulating, whereas, on the other hand, the rubber cable, no matter what the size, always finds its way to the scrap heap, *en bloc*.

Naturally, much depends upon the course taken by the price of the raw material in the near future. Even now the price is such as ought to attract a Chancellor of the Exchequer in search of new sources of revenue. A few years should see the supply largely augmented, and, let us hope, the price largely decreased. Should the present level become permanent, and cable-makers increase the prices to the same tune as the golf-ball makers, who have already drawn the ire of certain indignant golfing correspondents, then it is not improbable that a cheaper article will supersede the old and valued vulcanised rubber cable altogether.

PARLIAMENTARY.

L.C.C. General Powers Bill.

SIR F. LEYLAND BARRETT'S Committee on June 14th considered the General Powers Bill of the London County Council. Amongst other things powers were asked for to enable special constables to be appointed to protect the property of the Council.

MR. FELL, chief officer of the L.C.C. tramways, said he had charge of the whole of the Council's tramway undertaking, which employed nearly 10,000 persons. The effect of the clause asked for would be to give the Council power to appoint constables in the same way that the railway and dock companies did for the protection of their premises. One place where this was required was the central car repair depôt at Woolwich. The Council had 1,260 electric cars, and in a few years would have 2,000. They had just over 7 acres of land adjacent to the river. The first portion of the depôt had been erected, and the second portion was being erected, whilst the third portion was on paper. The total cost of the depôt would amount to about £250,000, and about 1,200 men would be employed. The work at the depôt involved the employment of a large amount of valuable material, including brass and copper, and there was a large quantity of scrap produced, which was easily purloined. They had had serious instances of theft. By getting these powers they would be able to give employment to some of their old employés who were, through some reason or another, unfit to work on the cars.

A representative of the Home Office said that his department would not object to the power being confined to land controlled by the Council, and the Committee granted the power subject to this reservation.

On June 15th the Committee commenced the consideration of Part 4 of the Bill dealing with the subject of smoke prevention. Mr. Fitzgerald, K.C., Mr. Talbot, K.C., and Mr. Charteris appeared for the L.C.C., and amongst the opponents were companies supplying electrical energy in the Administrative County, represented by Mr. Hutchinson; the Central London Railway, represented by Mr. Lloyd, K.C., and Mr. Courthorpe Munroe; the Underground Electric Railways of London, represented by Mr. Balfour Browne, K.C., Mr. Roskill and Mr. Macassey; the West Ham Corporation, the Gas Light and Coke Co., and a number of railway companies.

MR. FITZGERALD, K.C., in opening the case, said the smoke nuisance was a preventable one, and its prevention depended mainly on sufficient care and skill being taken in the construction of furnaces, and sufficient skill and care being taken in the management of furnaces, and especially in the stoking of them. Not only would its suppression be a benefit to the public, but also to the owners of works, because experience had shown that the fact of doing away with the smoke nuisance by having complete combustion of fuel, created a large economy in the consumption of coal. In the past a great many successful prosecutions had been taken under Sec. 24 (*b*) of the Public Health (London) Act, 1891, but two years ago the Underground Electric Co. were prosecuted with regard to a nuisance arising from the Lot's Road generating station. Their defence was that the smoke was not black smoke, and accordingly that they had not committed any offence under the section. They proved by scientific witnesses, to the satisfaction of the magistrate, that the smoke was dark brown or dark grey, and the magistrate dismissed the case.

The CHAIRMAN: The decision of the magistrate was that you must prove the smoke is black in order to bring it within the section.

MR FITZGERALD said it was almost impossible to prove that the smoke was absolutely black, and, in fact, it was hardly ever black. Accordingly judged from the strictly scientific standpoint, it was almost impossible to get a conviction. It was accordingly asked that the word "black" be omitted from the section. Another difficulty was this. Of recent years a large number of borough councils had become possessed of electricity works, and as the borough council was the proper authority to enforce the law, a difficulty at once arose if they were themselves creating the nuisance. Power was, therefore, sought to enable the County Council to put the law in force, and also to take proceedings against electricity or industrial works. With regard to the electric generating stations generally, by Sec. 81 of the Electric Lighting Act of 1899, they were liable to be proceeded against for nuisance. The provisions of that Act did not apply to London in terms, but similar provisions had been inserted in most of the London Orders. There were, however, cases in London where such provisions had not been inserted, and certain difficulties might arise in a prosecution. There should be no exceptions of this kind, but the law should be uniform. The Council also sought to include Government works in the Act, and to enable them to prosecute in the case of nuisance arising from works adjoining the county boundary. Coming to the petitions against the Bill, Counsel said the Central London Railway Co. appeared as the owners of an electricity generating station. Some years ago this company were convicted, but they had since carried on their works in a satisfactory way. The petition of the companies supplying electrical energy in London said the powers asked for would seriously hamper them in fulfilling their statutory duties, and was unreasonable and objectionable. This was a mere vague general statement, and he could not see how the companies would be hampered in any way.

On Friday counsel for Marylebone Borough Counsel said that in view of Mr. Fitzgerald's statement that the London County Council would not take proceedings against the Borough Council without the consent of the Local Government Board, he was instructed to withdraw the Marylebone Borough Council's opposition.

MR FITZGERALD remarked that there were no Borough Councils opposing the Bill.

MR. JOHN OLLIS was then cross-examined by Mr. Hutchinson, who represented electrical companies in the Administrative County of London. Counsel contended that by the elimination of the word "black" from the Bill, the County Council had taken away the only protection that a manufacturer who was doing his duty had got against a man who was not.

Do you know that when a fog comes on boilers in stations that have been normally consuming 300 lb. of coal have had suddenly thrown on them a load of three-quarters of a ton?—WITNESS: Might I point out that when a fog comes on, nature intervenes and prevents the local authorities from seeing the smoke issuing from the chimneys.

The smoke nuisance clauses were further considered by the Committee on Wednesday, when Mr. C. H. Merz gave evidence on behalf of the electric railways company.

(To be continued.)

Yorkshire Electric Power Bill.

ON June 16th the Bill of the Yorkshire Electric Power Co. came before Mr. Emmott's Committee on Unopposed Bills.

MR. CRIPPS, on behalf of the promoters, said the company was incorporated in 1901, and authorised to supply over a very large area in Yorkshire. The Bill, with the exception of Clause 6, related to the financial affairs of the company. Clause 2 enabled them to issue as preference shares part of the capital of £2,000,000 authorised in 1901. They had raised a considerable amount as ordinary capital, but found a difficulty in raising further money in ordinary shares, and wished for the power to raise further capital as preference stock. Clause 3 proposed to give them power to divide their capital into classes of shares and to charge these classes upon individual portions of the undertaking. With a company operating over an area so large, some parts of the undertaking might be more remunerative than others, and it would be possible to raise money on better terms on the more prosperous parts of the undertaking.

MR. LUPTON (chairman of the company) said the company had issued £266,000 ordinary capital, the whole of which was fully paid up. They had also issued £85,000 debentures, the whole of which would be paid up within a few weeks. Further capital was required to meet the demands made upon them. Although they were making a profit, they had not yet paid a dividend, therefore they could only obtain more ordinary capital at a heavy discount.

The CHAIRMAN asked if there were any precedents for this charging of shares on an individual part of the concern. It seemed

to him it would cause a ragged thing.—Witness said the point was this: A group of collieries would be willing to put up £100,000 to enable the company to supply them with electrical energy, but they did not want to take the risk of the whole undertaking.

Mr. Cripps said, so far as he knew, no similar provisions had been put into force.

The Chairman: If I may prophesy, I think it will be some time before they are.—Witness said the clauses were taken from the West Kent Electric Power Bill, but that company sold part of their area instead of putting them into force.

The Chairman said it would be interesting to know if the powers proved a success.

Mr. Cripps said that Clause 6 was designed to enable the company to subscribe for and hold shares or stock in undertakings which were taking, or intended taking, a supply of energy from them.

The Chairman: You know we have refused these powers elsewhere?

Mr. Cripps said he knew that the Committee had refused to allow a company to subscribe for shares in factories and so on which would take a supply of energy, but they were not asking for such an extended power as that.

Mr. Woodhouse, engineer to the company, gave evidence, and said the intention was that the company should have no greater power than to subscribe funds to assist in the institution of electrical undertakings. Thirty provisional orders for lighting had been granted in the district, and 13 had already been revoked by the Board of Trade because the promoters, who were the local authorities, would not put them into force. Then six local authorities had transferred their orders, as they thought financial success was uncertain if they themselves worked the order. Six other orders were lying dormant, and five local authorities were taking bulk supplies. Therefore, out of 30 orders in the district, only five were in operation, and they were taking bulk supplies.

Mr. Cripps pointed out that there was a great difference between subscribing money to an ordinary commercial company and a company which was to carry out the powers of an Electric Lighting Order. He expressed himself quite willing to amend the clause so as to make it clear that the only persons whom they would assist were authorised undertakers.

Witness said that the company had been greatly hampered in its work by the existence of these electric lighting orders because whilst the local authorities were making up their minds whether they would themselves exercise the powers, they were naturally unwilling to allow the company to come into their areas, and power users who wanted a supply had been unable to obtain it.

Mr. Moon, K.C. (speaker's counsel) asked how it was proposed to assist local authorities.—Witness said they had had applications from several small local authorities who wished to light their districts with electricity as it would be cheaper, but they did not want to find the necessary capital. His company would be prepared to consider an arrangement whereby they would find the capital which would be repaid to them over the period of any agreement which might be entered into.

Mr. Moon pointed out that the local authorities would have power to borrow money for the purpose.

Sir D. Brynmor Jones (a member of the Committee) said it seemed to him the power asked for was a great alteration from the business which the company was incorporated to carry out. They would become money lenders.—Witness said he did not think so. In their original Act their powers were fairly general, and they were empowered to supply fittings, &c., to consumers. What they asked was all for the ultimate development of the business, but the local authorities wished to keep the details in their own hands.

Sir D. Brynmor Jones asked why the local authorities should not come on the market and borrow money.—Witness said the company would be pleased if they would, but the local authorities felt that if the company were prepared to take a deferred payment it showed that they had faith in the success of the undertaking, and the period over which the payments might spread would depend on whether it was successful or not. They could repay out of profits.

Sir D. Brynmor Jones said the Local Government Board would only allow the usual period.

Mr. Cripps said it would introduce another body from whom the local authorities could borrow.

Mr. Beale (a member of the Committee) asked if the Clause would not be equivalent to extending the articles of association of the company.

Mr. Cripps said the North Metropolitan Electric Power Co. had even larger powers, as they could lend to factories. The Kent Electric Power Act of 1906 had similar clauses, and there were other precedents.

The Chairman asked whether if the powers were granted it was likely they would be exercised.—Witness said he thought they would be put into force almost immediately.

The Committee passed the preamble of the Bill, but amended Clause 6 so as to restrict the taking of shares or lending of money to authorised undertakers.

London County Council Tramways Bill.

(*Continued from page* 993.)

Mr. Courthope-Munroe, for the Lambeth Borough Council, said that they did not propose to pursue their contention that the County Council should acquire a piece of Tate's Public Garden. The local authority, however, did ask that the Committee should impose on the County Council an obligation to leave at least a 7 ft. 6 in. pathway on either side of the line of route. They also contended that the promoters should set back the entrance gates of Brockwell Park and throw that amount of space into the public road. That would be increasing the danger at that spot, which was already known as the South London death-trap. Lambeth Borough Council wanted a 9 ft. 6 in. roadway on either side of the line. As to the County Council objection to allowing a piece of the Park to be thrown into the roadway, the local authority could not see their reason. The Borough Council's suggestion was simply a re-arranging of the Park railings. It would not interfere with the public's open space, for what was now one side of the railing would then be on the other.

Evidence was then given in support of the local authority's case.

The Committee suggested that the parties should see whether they could arrive at some agreement. They thought the Borough Council should consider whether they would renew their offer of contributing to the improvement at the Herne Hill entrance to Brockwell Park.

A representative of the Home Office stated that it had been found that tramway lines running close to the pavement were very inconvenient, and the Commissioner was now sending out a request that lines should only be laid in the middle of the road.

The Committee then considered Tramway No. 12, which is a proposal for extending the existing line in Tooley Street 250 yds. towards London Bridge. The proposed line would cost £5,500, and would be on the conduit system.

Mr. Maurice Fitzmaurice, giving evidence in support of the proposal, said that the greater portion of it would be a double track, and the other single. The reason why a part of it would be a single track, was in order to meet the views of occupiers of wharves and other places in Tooley Street, who said that a double line would cause a congestion of traffic in front of their warehouses. Another reason was to allow a width of 9 ft. 6 in. between the rails and the kerb.

In cross-examination by Mr. Harper, representing petitioners against the Bill, Witness admitted that the scheme was practically the same as that rejected by a Parliamentary Committee last year. The only new feature was that the line which it was proposed to extend, would soon be an electrified one—the power to run the tramway by electric traction was obtained under the same Bill which contained the scheme now being considered.

By the Chairman: The service would be a three-minute one. They had cases where there was a service every 20 seconds.

On Thursday, June 16th, Mr. A. L. C. Fell, Tramways Manager to the L.C.C., said that he estimated that there would be a net profit of £143 on the tramway if the present proposal was authorised. Electrification brought increased traffic. The County Council had no objection to complying with the suggestion of the Home Office that the line should be even still further extended towards London Bridge.

In answer to the Chairman, witness said that it was much cheaper to run cars worked by electricity, than by horse traction; for instance, the working expenses per car-mile for electric cars was, roughly, 6½d., whilst the cars worked by horses cost 10½d.

This closed the case for the promoters, and Mr. Harper proceeded to call evidence on behalf of the petitioners against the Bill.

After hearing this evidence, the Committee on Monday passed the proposal to extend the existing tramway in Tooley Street 250 yards towards London Bridge at a cost of £5,500.

The same day it was announced that an agreement had been come to between the Lambeth Borough Council and the promoters as to the Norwood to Brixton scheme. A clause had been agreed upon whereby the L.C.C. would not open the extension along Dulwich Road until the entrance to Brockwell Park had been set back and the thoroughfare widened. The Lambeth Council will contribute £500 towards the cost.

Rhondda Urban District Council (Tramways Extensions).—Sir F. Layland Barratt has reported for the Local Legislation Committee which passed the preamble of the Rhondda U.D.C. Tramways Extension Bill, that in consequence of a report by the Board of Trade, Clause 12 has been struck out. The Clause empowered the Council to enter into agreements with the owner or lessee of any tramway within or beyond the district for the working of such tramways or for the leasing of the Council tramways or for mutual running powers. The Committee have also fixed the following terms for repayment of loans authorised by the Bill:—£29,500 for the construction of tramways, 30 years; £5,000 for the electrical equipment of tramways and other tramway purposes, 20 years.

Progress of Bills.—In the House of Commons, last week, the Morecambe Tramways Bill was read a third time, and the following passed second reading: The Baker Street and Waterloo Railway Bill, the London Electric Railway Amalgamation Bill, and the London Electric Supply Bill.

Scotch Electric Lighting Orders.—No. 2 Electric Lighting Provisional Order Bill, which has passed the Examiners, contains the following Orders:—Ardrossan, Saltcoats and District. Cambuslang. Cowdenbeath, Lochgelly and District. Largs.

Irish Electric Lighting Orders.—The Electric Lighting Provisional Order (No. 1) Confirmation Bill, which has been committed for second reading, confirms the Provisional Orders granted to the Lavan U.D.C., County Meath, and to the Swinford Rural Council, County Mayo.

Electric Lighting Provisional Order (No. 1) Bill.—This Bill, promoted by the Board of Trade, has passed the Standing Orders stage, and has been remitted to the House for the second reading. The Bill confirms the following Provisional Orders:—Cheadam Electric Light and Power Co.:—Church. Cleveden. Dawlish. Derby. Gorseinon. Huddersfield. Ormskirk. Runcorn. Runcorn (Weston). Smethwick. Widnes.

Royal Assent.—The Farnham Gas and Electricity Act has received the Royal Assent.

NEW PATENTS APPLIED FOR, 1910.

(NOT YET PUBLISHED.)

Compiled expressly for this journal by MESSRS. W. P. THOMPSON & Co., Electrical Patent Agents, 285, High Holborn, London, W.C., and at Liverpool and Bradford, to whom all inquiries should be addressed.

13,615. "Electrical and mechanical device for rotary variators for advertising and other purposes." E. B. HOWARD and W. HOWARD. June 6th.

13,643. "Combined braking and starting apparatus for electrically-propelled vehicles." W. N. STEWART. June 6th.

13,646. "Improvements in or relating to electric traction on the induction system." D. SUCHOSTAWER. June 6th.

13 655. "Improvements in or relating to electric fittings, wirings and the like." H. A. BEARD, J. W. TOWNSEND and A. J. WRAY. June 6th.

13,662. "Improvements in or relating to electro-magnetic devices." A. J. BOULT. (W. A. Crowdus, United States.) June 6th. (Complete.)

13,669. "Improvements in apparatus for use in the electro-deposition of iron." S. O. COWPER-COLES. June 6th.

13,672. "Improvements in or relating to electrical conductors." SIEMENS BROS. & Co., LTD. and W. DIESELHORST. June 6th. (Complete.)

13,676. "Improved method of and means for insulating electric cables and apparatus therefor." R. C. CREASEY. June 6th.

13,694. "Improvements in electrical transformers." BRITISH THOMSON-HOUSTON Co., LTD. (General Electric Co., United States.) (Application for Patent of Addition to No. 13,278/04.) June 6th.

13,704. "Improvements in and relating to electrical time switches." W. HAMILTON, and FERRANTI, LTD. June 6th.

13,707. "Improvements relating generally to electromagnetic means for converting electrical energy into kinetic energy and particularly to guns, electric percussion tools, electric bells, and the like." A. L. LEAN. June 6th.

13,709. "Improved means for regulating dynamos." J. L. ROUTIN. June 6th. Complete.)

13,710. "Improvements in explosion motors." SOCIETE DES MOTEURS GNOME. Date applied for under Sec. 91 of the Act, November 24th, 1909, being date of application in France.) June 6th. (Complete.)

13,716. "Improvements in tools or machines operated by a reciprocating element, and in means for driving them electrically." R. S. CRAWFORD and J. SCOTT. June 7th.

13,739. "Improvements in primary batteries." J. HEROLD. (Date applied for under Sec. 91 of the Act, July 8th, 1909, being date of application in Austria.) June 7th. (Complete.)

13,747. "Improvements in petrol-electric transmissions for vehicles and launches." W. A. STEVENS. June 7th.

13,797. "Improvements in or relating to the electric lighting of gas burners." M. MELAGE and P. WOOG. (Application for Patent of Addition to No. 11,362/10.) June 7th. (Complete)

13,812. "Holder for carbon brushes." E. C. R. MARKS. (A. Gesse, Germany.) June 7th. (Complete.)

13,823. "Improvements in and relating to alternating-current motor-control systems." BRITISH THOMSON-HOUSTON Co., LTD. (General Electric Co., United States.) June 7th.

13,828. "Improvements in portable electric lamps." F. R. LANGE. (Date applied for under Sec. 91 of the Act, February 28th, 1910, being date of application in Germany.) June 7th. (Complete.)

13,833. "Improvements in or connected with automatic torsion dynamometers." R. R. BEVIS and M. G. CLAYTON. June 8th.

13,843. "Improvements in protected or armoured electric switch fuses." H. J. DEAN. June 8th.

13,889. "Means for and methods of limiting the flow of current on a short-circuit." A. M. TAYLOR. June 8th.

13,899. "Improvements in apparatus for electrical ignition in internal-combustion engines" FIRM R. BOSCH. (Date applied for under Sec. 91 of the Act, August 18th, 1909, being date of application in Germany.) June 8th. (Complete.)

13 901. "Improvements in sparking plugs for internal-combustion engines." Firm ROBERT BOSCH. (Date applied for under Sec. 91 of the Act, August 3rd, 1909, being date of application in Germany.) June 8th. (Complete.)

13,917. "Improvements in and relating to apparatus for the transmission of electrical impulses for telegraphy, type-setting and the like." H. KNUDSEN. June 8th.

13,946. "Improvements in electric insulating material." BRITISH THOMSON-HOUSTON Co., LTD. (General Electric Co., United States.) June 8th.

13,961. "Improvements in and relating to resistances in connection with controlling induction motors." ELECTRIC CONSTRUCTION Co., LTD., and N. PENSABENE. June 9th.

13,962. "Improved means for use in controlling induction-motors." ELECTRIC CONSTRUCTION Co., LTD., and N. PENSABENE. June 9th.

13,991. "Method of and means for controlling from a distance electric apparatus, and especially telegraph apparatus and the like." E. H. WIDEGREN and K. A. WIDEGREN. (Date applied for under Sec. 91 of the Act, June 18th, 1909, being date of application in Sweden.) June 9th. (Complete.)

14,000. "Improvements in and relating to calling apparatus for telephones and the like." P. W. WALL. June 9th.

14,024. "Improvements in and relating to alternating-current dynamo-electric machines of the commutator type." ALLGEMEINE ELEKTRICITATS-GES. (Application for Patent of Addition to No. 23,288, 1902. Date applied for under Sec. 91 of the Act, June 19th, 1909, being date of application in Germany.) June 9th. (Complete.)

14,042. "Improvements in or connected with electrical ceiling roses, junction boxes, fuses, and the like." H. L. KIRBY and LOXLEY & Co., LTD. June 10th.

14,045. "Improvements in terminals or connectors for wires, cables, or the like." C. N. STANILAND. June 10th.

14 077. "Improved apparatus for the utilisation of the electricity in the clouds." W. VÖLSKE. June 10th.

14,090. "Application of a number of electric bulbs with one or more reflectors for lighting purposes." A. BAKER and LONGSTRETHS, LTD. June 10th.

14,092. "Improvements in electrical condensers." SIEMENS BROS. DYNAMO WORKS, LTD. (Siemens Schucke t-Werke, G.m.b.H., Germany). June 10th. Complete.)

14,097. "Lamp-locking device for electric lampholders." T. WILSON. June 10th.

14,116. "Improved process for decarbonising filaments for use in metallic-filament glow lamps." WOLFRAM LAMPEN AKT.-GES. (Date applied for under Sec. 91 of the Act, June 26th, 1909, being date of application in Germany.) June 10th. (Complete.)

14,125. "Improvements in and relating to dynamo-electric machines." ALLGEMEINE-ELEKTRICITATS GESELLSCHAFT. (Date applied for under Sec. 91 of the Act, June 10th, 1909, being date of application in Germany.) June 10th. (Complete.)

14,126. "Improvements in or relating to electric clocks." F. HOLDEN. (Application for Patent of Addition to No. 14,873, 1909.) June 10th.

14,141. "Improvements relating to the operating mechanism of electric arc lamps and the like." R. S. BROWN. June 11th.

14,153. "Improved arrangements for preventing remanent magnetism in dynamo-electric machines." SIEMENS BROS. DYNAMO WORKS, LTD. (Siemens-Schuckertwerke G.m.b.H. Germany.) June 11th. (Complete.)

14,172. "Automatic electric telegraph of change of range or distance." F. A. CORNFORD. June 11th.

14,173. "Improvements of magnetic compasses." A. J. PARKER and T. P. MIDDLETON. June 11th.

14,185. "Improvements in holders for telephone receivers." J. TRENNER. June 11th.

14,186. "Improvements in the protection of motor-starting arrangements." M. KALMANN. (Application for Patent of Addition to No. 16,292/08.) June 11th. (Complete.)

14,193. "Improvements relating to protective apparatus for alternating-current distribution systems and apparatus." K. M. FAYE-HANSEN. June 11th.

14,196. "Improvements in circuits for automatic telephone exchanges." SIEMENS BROS. & Co., LTD. (Siemens and Halske Akt.-Ges., Germany.) June 11th. (Complete.)

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MASTER SWITCHES FOR RADIO-TELEGRAPH AND RADIO-TELEPHONE STATIONS. A. W. Sharman. 11,242. May 12th.

PLOUGHS FOR ELECTRIC TRAMCARS. G. L. Laurie-Walker and J. T. Niblett. 11,540. May 15th.

COMPOUND ANODE AND CATHODE BARS FOR USE IN THE ELECTRODEPOSITION OF METALS. S. O. Cowper-Coles. 11,948. May 19th.

FLEXIBLE PROTECTION FOR ELECTRIC CABLES AND THE LIKE PURPOSES. E. L. Pease. 11,981. May 21st. (Cognate application, No. 25,920 of 1909.)

APPARATUS FOR FORMING AND TRANSFORMING CIPHER MESSAGES FOR TELEGRAPHIC AND OTHER PURPOSES. R. T. Nicholson and H. W. Higham. 12,005. May 21st.

METHOD OF AND MEANS FOR CONTROLLING AND INDICATING THE CONDITION OF CONTROL OF ELECTRICALLY-PROPELLED TRAMCARS AND OTHER VEHICLES. W. E. Ireland. 12,139. May 22nd.

ELECTRICAL CONDUCTORS. C. Vernier. 12,146. May 22nd.

APPARATUS FOR CONTROLLING A PLURALITY OF INDEPENDENT ELECTRIC CIRCUITS AT PREDETERMINED TIMES. J. J. Stockall. 14,628. June 22nd.

IRONCLAD ELECTRIC SWITCHES. C. H. Pearson. 14,710. June 24th.

TERMINALS FOR "SHUNTS" AND OTHER ELECTRICAL APPARATUS. Kelvin and James White, Ltd., W. T. Evans, and S. B. Wilson. 15,006. June 28th.

ELECTRIC CIRCUIT-CLOSING CONTACTS. R. Mackenzie. (Sundh Electric Co.) 15,075. June 28th.

PREPARATION OF FILAMENTS SUITABLE FOR INCANDESCENT ELECTRIC LAMPS. Soc. Française d'Incandescence par le Gaz (Système Auer). 15,193. June 29th. (Date applied for under International Convention, July 18th, 1908.)

ELECTRIC IGNITION APPARATUS FOR INTERNAL-COMBUSTION ENGINES. B. Brooks and F. H. Alston. 15,802. July 7th.

APPARATUS FOR WINDING FRAMES, COILS AND SIMILAR PARTS OF ELECTRIC MACHINERY WITH INSULATING MATERIAL, AND FOR MANUFACTURING STRUCTURES FROM THE SAME MATERIAL. E. Haefely. 16,457. July 14th.

ELECTRIC IGNITING APPARATUS FOR FUSES AND THE LIKE. Nobel's Explosives Co. and R. Evans. 16,709. July 17th.

CROSSINGS AND JUNCTIONS FOR ELECTRIC TRACTION SYSTEMS. E. M. Munro and Railless Electric Traction Co. 17,106. July 22nd.

ELECTRIC AND OTHER ADVERTISING AND THE LIKE DEVICES. W. K. L. Dickson. 17,208. July 23rd.

MANUFACTURE OF METALLIC FILAMENTS FOR INCANDESCENCE ELECTRIC LIGHTING. H. Weber. 18,808. August 16th.

ELECTRIC POCKET LAMPS. S. Kraus. 18,863. August 16th.

HOLDERS FOR ELECTRIC INCANDESCENT LAMPS. P. Kleber. 21,672. September 22nd. (Date applied for under International Convention, September 22nd, 1909.)

ELECTRICAL ENERGY METERS. Siemens & Halske Akt.-Ges. 22,929. October 7th. (Date applied for under International Convention, October 8th, 1908.)

MACHINES FOR MANUFACTURING ELECTRIC-WELDED WIRE CHAINS. C. L. Graves. 23,323. October 12th.

SIGNALLING SYSTEMS. M. Gill. 25,196. November 2nd. (Date applied for under International Convention, January 13th, 1909.)

A Case of Resonance?—The report of the Nitrogen Utilisation Co., of Wiesbaden, states that building operations were so far completed by the end of January, 1909, that the works could be set in operation. Shortly afterwards an unusually high increase in the pressure took place and caused damage to a portion of the electrical machinery. This rise in pressure, which was in no way connected with the working of the furnaces, was solely to be attributed to an extraordinary coincidence of electrical properties of the apparatus in circuit. As a consequence of the damage, working operations could only be conducted with a limited supply of power in the first half of the year, and the improvement in this respect was only slight in the second half. Nevertheless a large quantity of nitric acid was produced and sold. The accounts exhibit a loss of £3,200 for 1909, as compared with a loss of £4,100 in the preceding year. The present year is expected to yield favourable results, especially when the proposed extensions have been carried out.

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The Electrical Review

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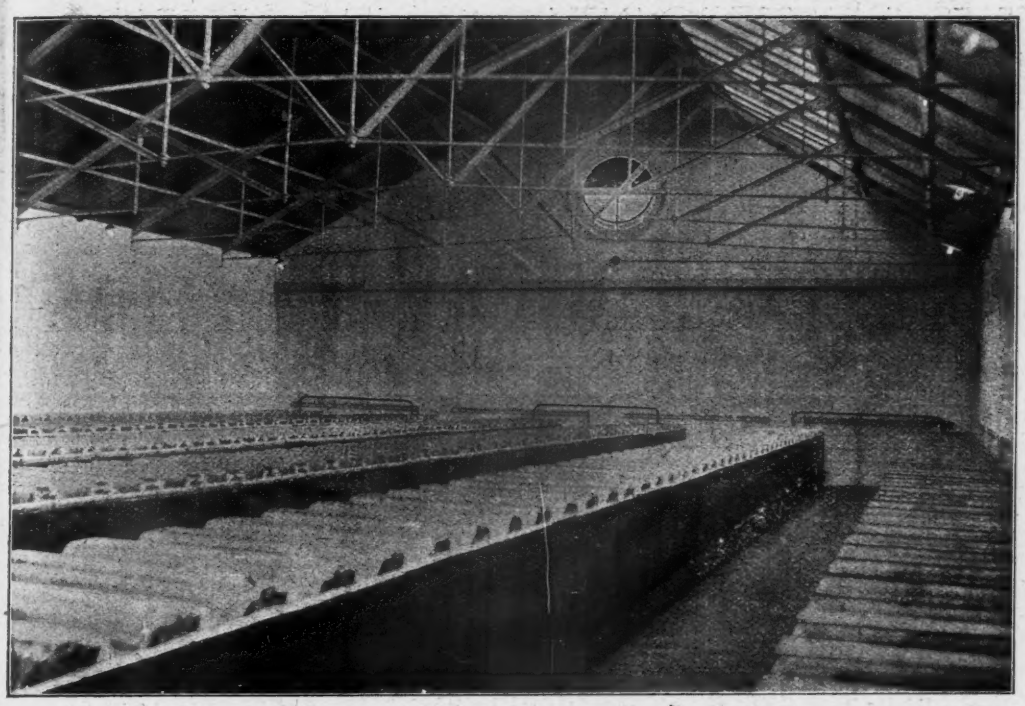

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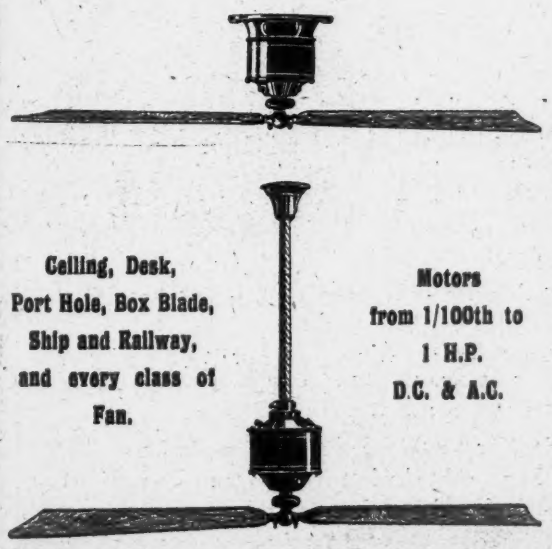

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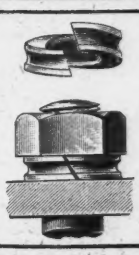

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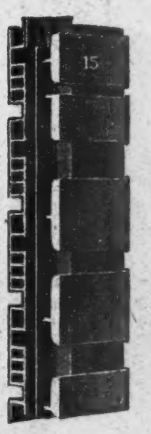

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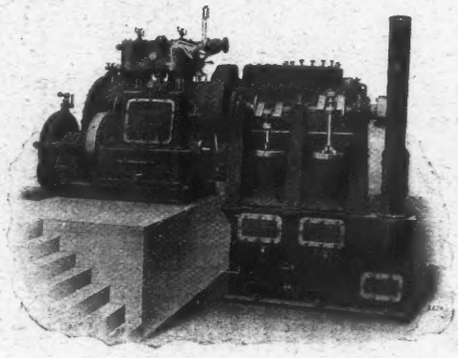

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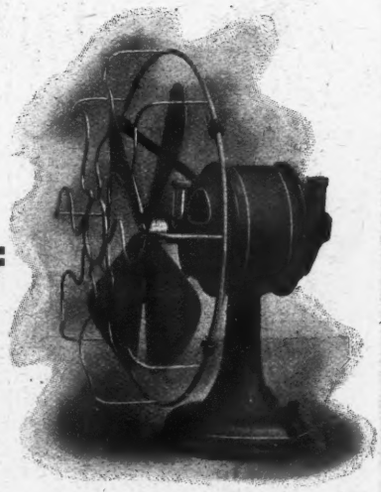

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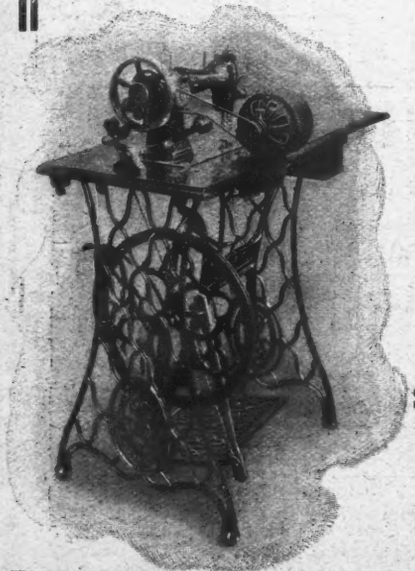

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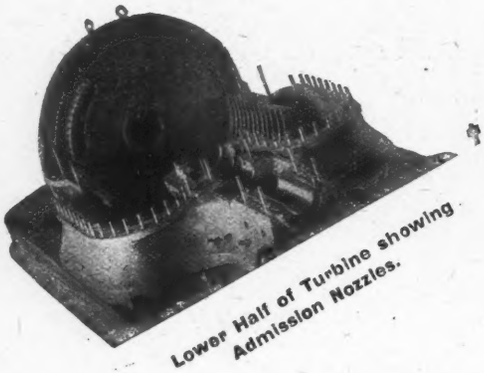
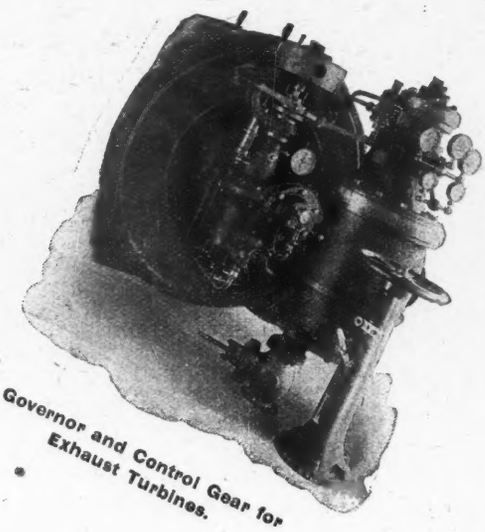


Lower Half of Turbine showing Admission Nozzles.



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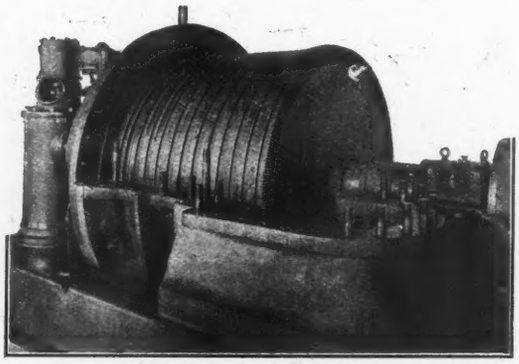
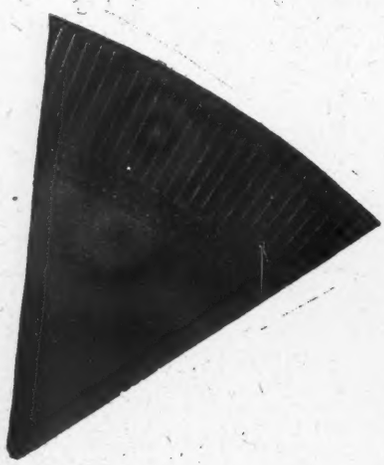


General Assembly of Turbine with Top Cover Removed.



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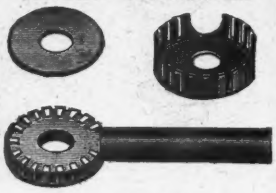

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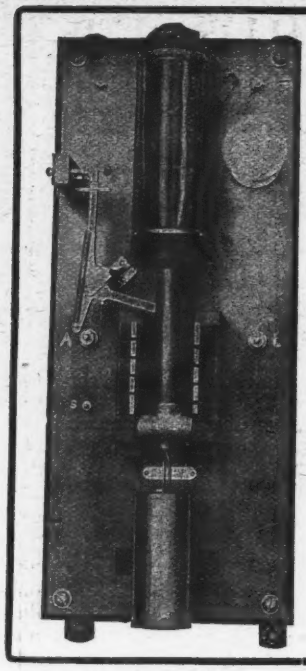

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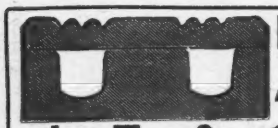

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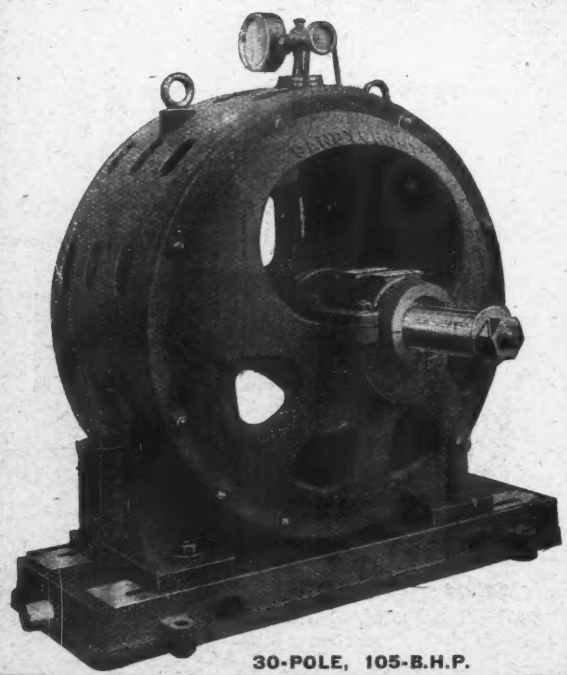

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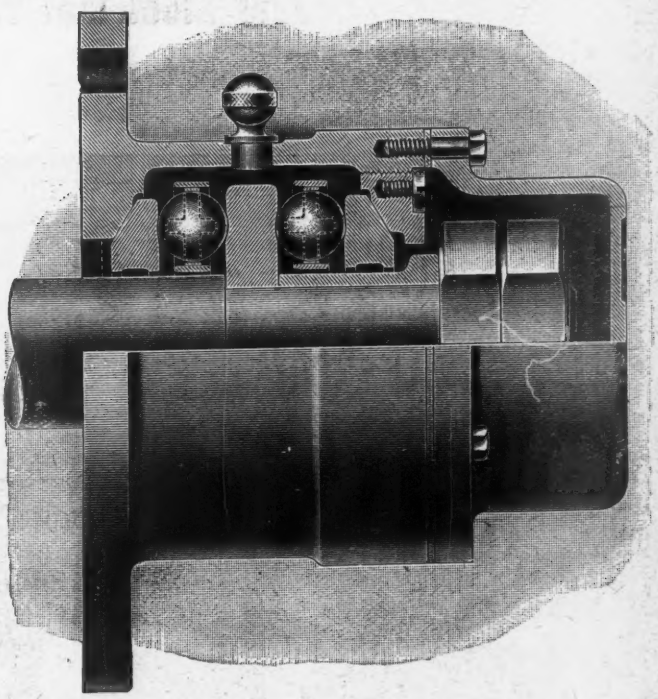

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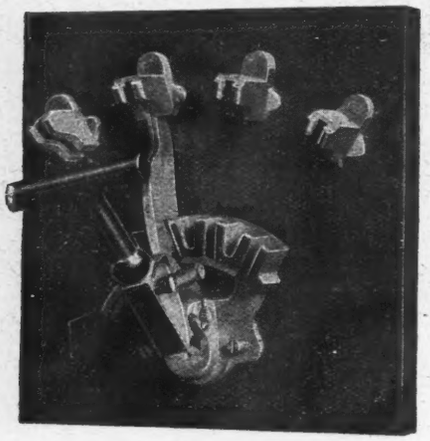

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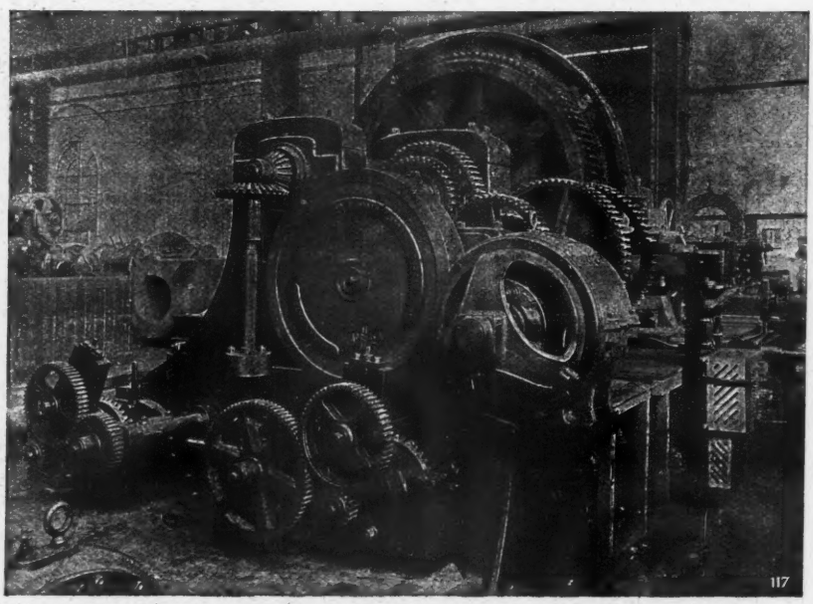

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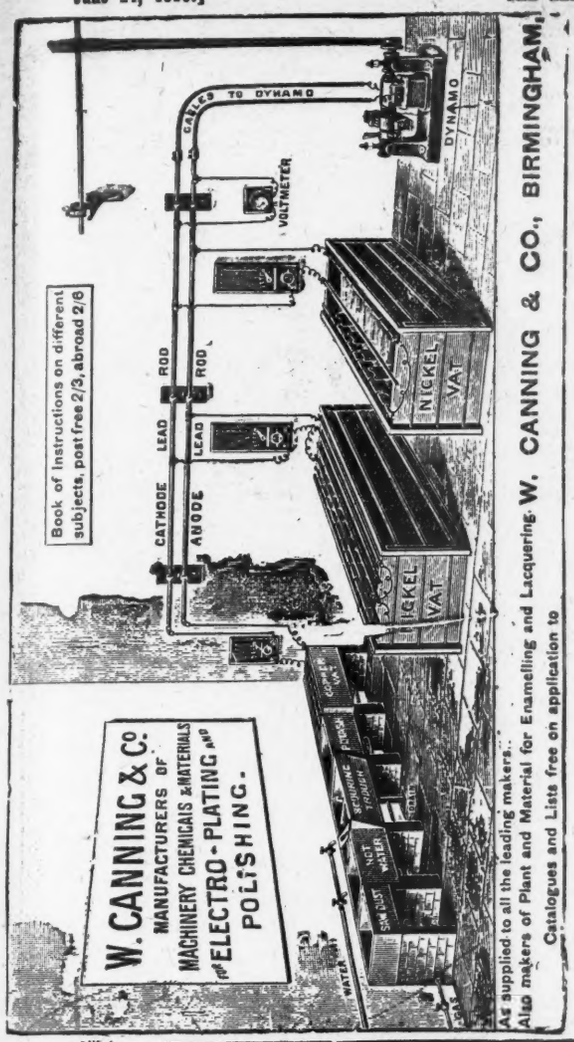
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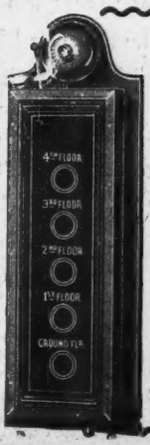

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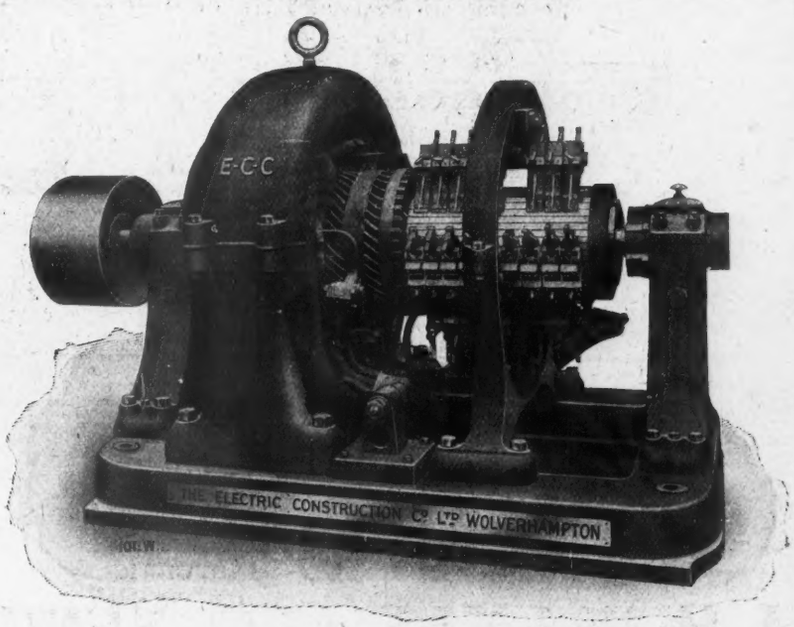

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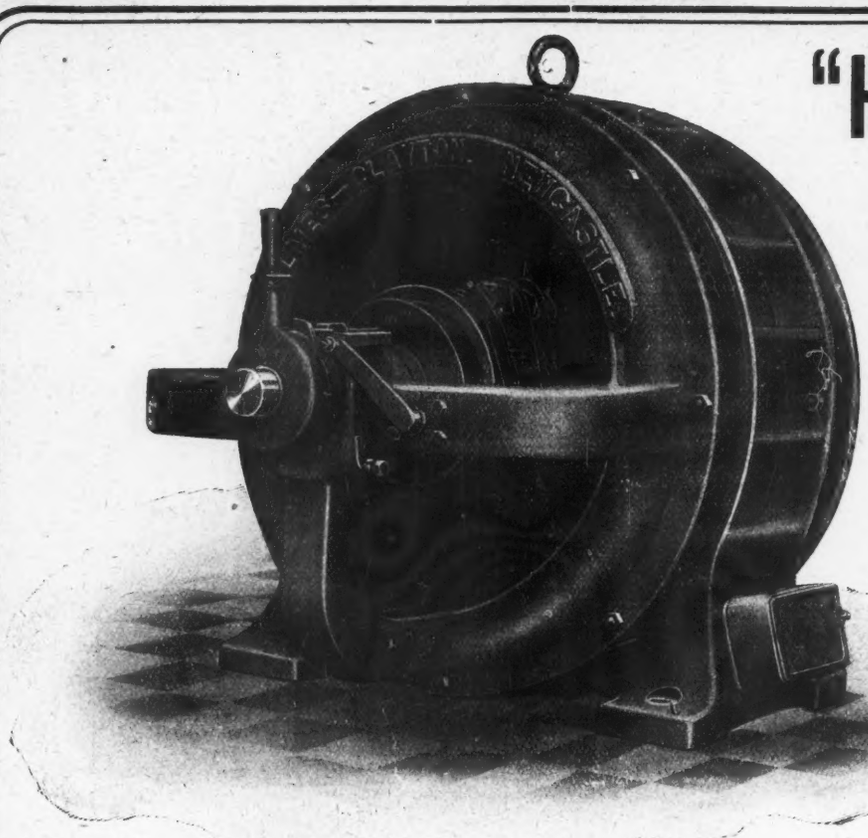

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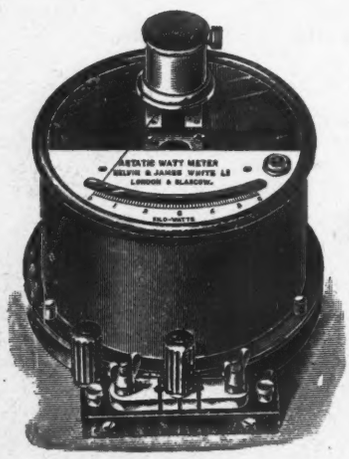

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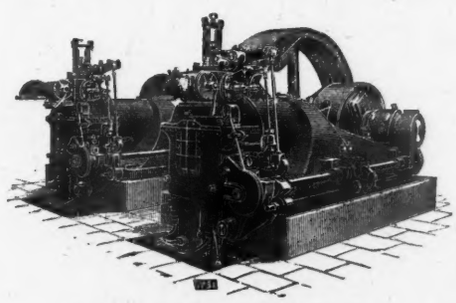

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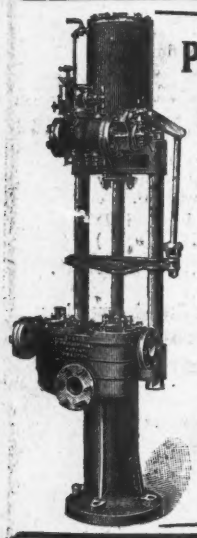

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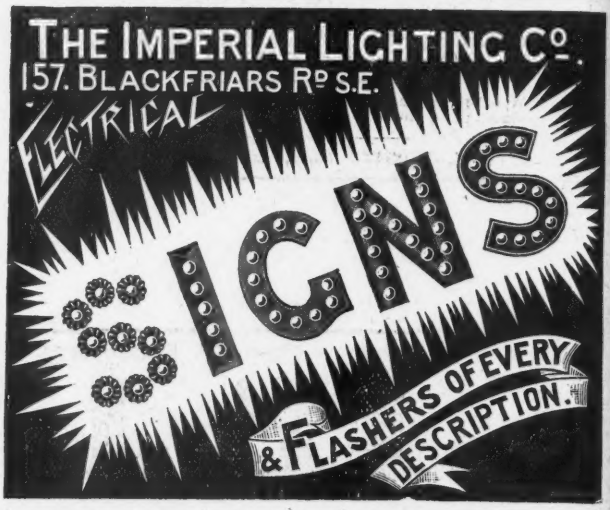

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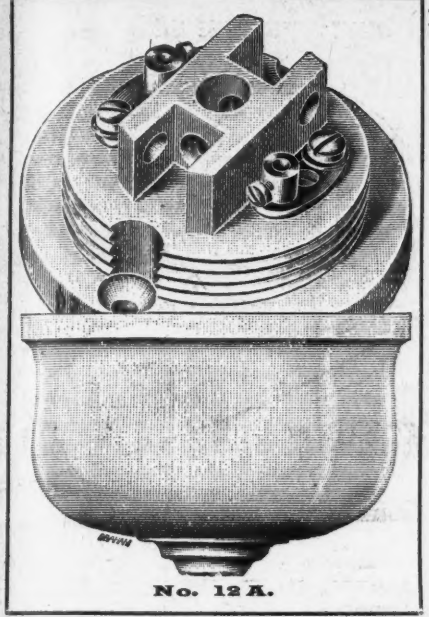

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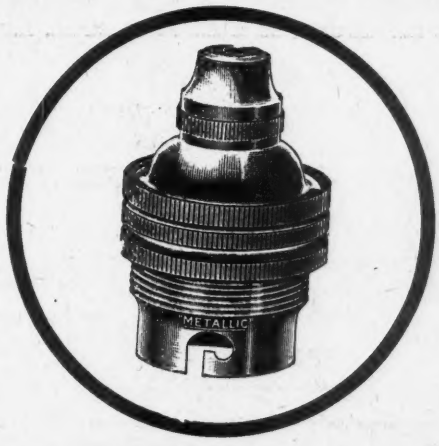

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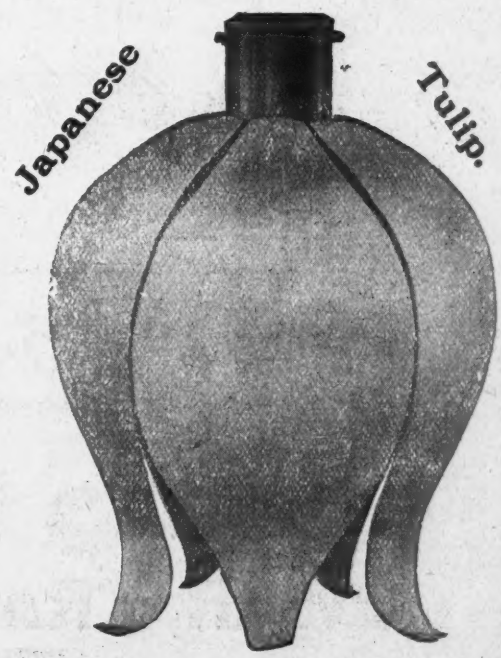

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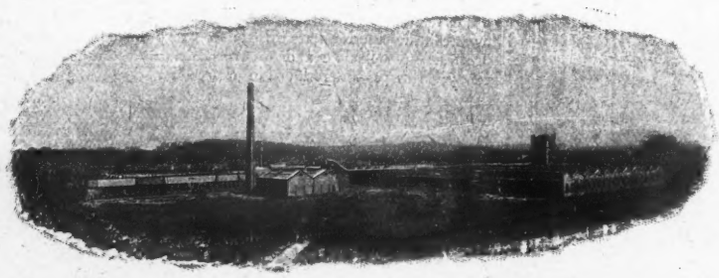

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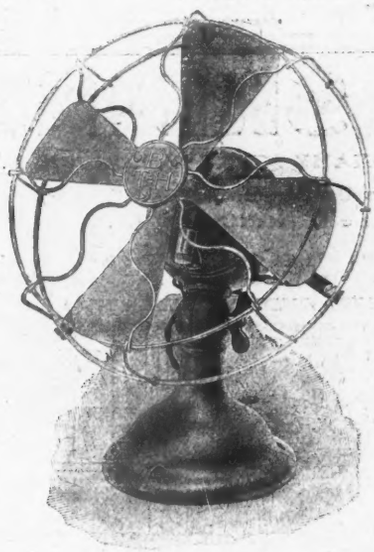

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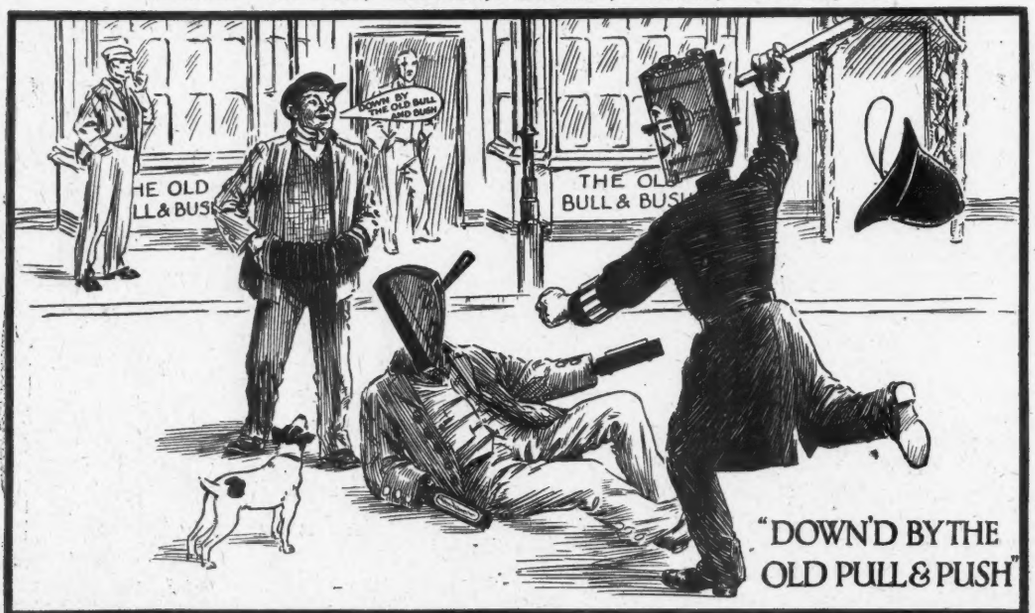

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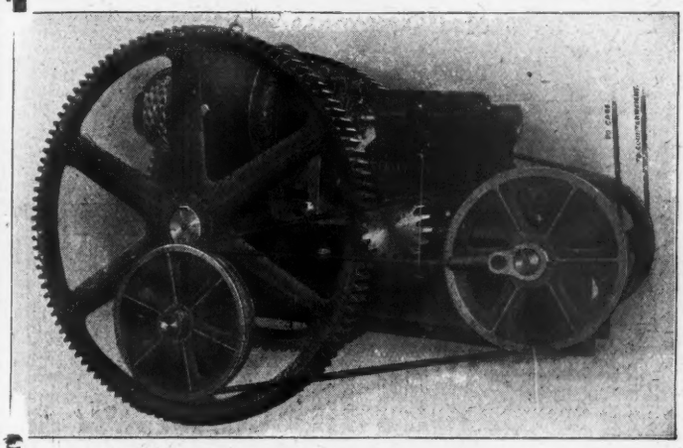

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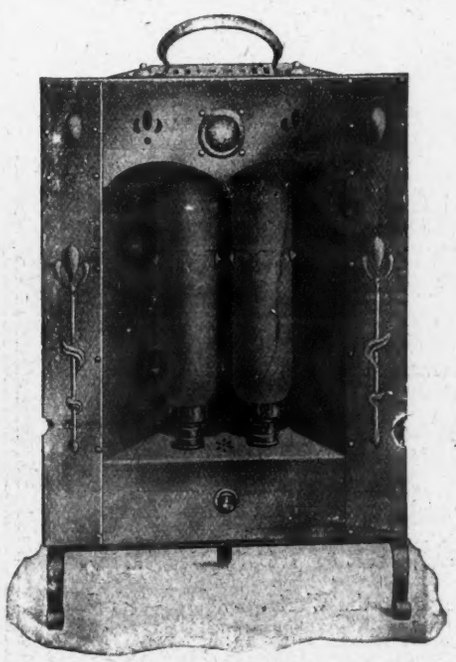

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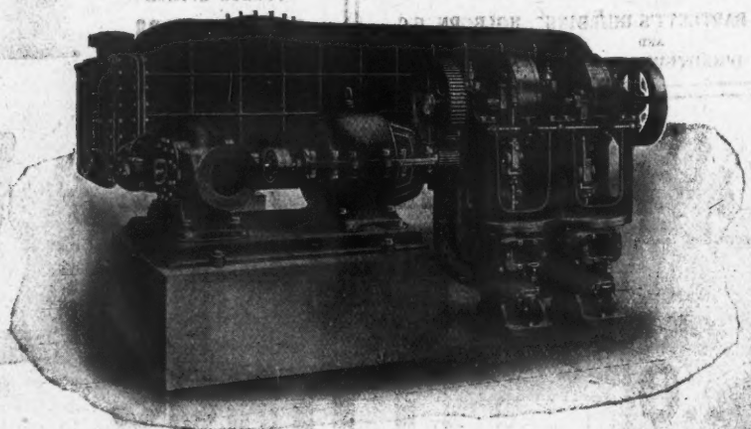

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FOR ILLUMINATED DECORATIONS
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'PIXIELITE' STRIP the cheapest and most effective of all temporary lighting systems, **ABSOLUTELY WEATHERPROOF**, even in the most exposed situations, rendering it especially suitable for **REGATTAS, GARDEN FETES, FLOWER SHOWS**, and for all outdoor decorations.

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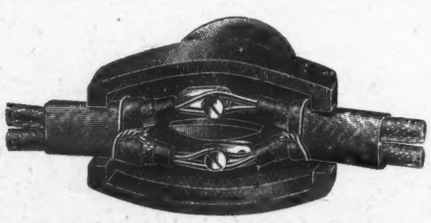

View of under-side of Holder (before sealing), showing connections and method of securing cable.

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ALL THAT VALUABLE PLOT OF FREEHOLD LAND containing 5089 square yards or thereabouts (net land) with extensive and valuable frontages of 193 feet 6 inches to Trafford Road, 229 feet 6 inches to New Park Road, and 227 feet 8 inches to Glen Street, and 213 feet 4 inches to the line of the Lancashire & Yorkshire Railway connecting their main line with the Docks of the Manchester Ship Canal. TOGETHER with the substantially built premises recently occupied by Messrs. William Brown & Sons and their sub-tenants. The whole is subject to an apportioned chief rent of £74 14s. 5d.

Vacant possession of all the premises can be arranged.

The Machinery, Plant, and Fixtures on the premises are not included in the sale. The purchaser shall have the option of buying the same within seven days from the date of the sale at a price to be fixed by a Licensed Valuer approved by the Vendors. If such option is not exercised, the Vendors shall retain the power to sell the same by auction at any time within five weeks from the date of sale.

The machinery, plant and fixtures are of modern construction and admirably suited for any purchaser wishing to engage in the business of a Building Contractor or Timber Merchant.

The Land and Premises are opposite to the principal entrance of, and in close proximity to the most central portion of, the Manchester Ship Canal and its Docks, and form one of the most eligible sites in this important and improving neighbourhood. The position, and the opportunity of acquiring it, are alike unique.

For further particulars and Conditions of Sale apply to the AUCTIONEER, Cromwell Buildings, Blackfriars Street; to MESSRS. CHARLES DUNDERDALE and Co., Solicitors, Marsden Street; or to

MESSRS. MARCH, CLAYTON & PEARSON, Solicitors,
22, Booth Street, Manchester. 8697

EDUCATIONAL NOTICES.

Latest time for receiving 9.30 a.m. Thursday.

THE BRITISH CORRESPONDENCE SCHOOL OF ELECTRICAL ENGINEERING.

Dept. B., 36, MAIDEN LANE, STRAND, LONDON, W.C.

Cheap prepaid Advertisements are inserted under this heading at the rate of One Penny Per Word (minimum 1s.). Three Consecutive Insertions for the price of two, if ordered and prepaid with first insertion.

AERONAUTICS; Installation Management; Wiring; Electrical Engineering; taught by Correspondence by British Experts to Students all over the world. Send for particulars to the British Correspondence School, Dept. B., 36, Maiden Lane, Strand, W.C. 6882

ELECTRICAL Engineering, Practical Mathematics, Mechanics, and Machine Drawing. All branches taught by sound, practical, Correspondence Courses, at low fees.—Apply for Syllabus to UNIVERSITY ENGINEERING COLLEGE, Stanstead Road, Forest Hill, London, S.E. 8644

SITUATIONS VACANT.

Latest time for receiving 9.30 a.m. Thursday.

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Original Testimonials should never be sent.

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A VACANCY occurs for a Premium Apprentice in the FELGATE INSTALLATION CO., LTD., Electrical and Mechanical Engineers. Broadway Buildings, Reading. Full particulars on application. 8628

ASSISTANT Engineer wanted, to take charge of outside work. Experience in interviewing, estimating for installations, and supervising wiring work is essential; knowledge of cable work is also necessary, but is not so important as commercial experience. Salary to commence, £100 per annum. Good prospects for a man with ability.—THE URBAN ELECTRIC SUPPLY CO., LTD, Hawick, N.B. 8689

ASSISTANT Foreman wanted, for construction of electrical controlling gear. Large works. Only men of proved ability need apply, stating age, experience, references, salary required.—8727, ELECTRICAL REVIEW, 4, Ludgate Hill, London.

ARC Lamp Fitter required for steel works; one accustomed to all types of lamps, both open and enclosed, and able to undertake own testing.—State age, experience, and salary required, 8764, ELECTRICAL REVIEW, 4, Ludgate Hill, London.

CANVASSER, to jointly represent Supply Authority and Contractor; low salary and high commission; energetic men only.—186, High Street, Hounslow. 8675

(Continued on next page.)

SITUATIONS VACANT.—*Continued.*

CANVASSER (Contractors) for Midlands, smart.—Full particulars to 8757, ELECTRICAL REVIEW, 4, Ludgate Hill, London.

CAPABLE Publicity and Advertising Assistant wanted immediately, by leading Electrical Manufacturers; must be able to compile catalogues, correct own proofs, also prepare smart and up-to-date advertising matter. Previous experience in similar position in electrical industries absolutely essential.—Apply by letter, stating qualifications and salary required, to 8527, ELECTRICAL REVIEW, 4, Ludgate Hill, London.

COMPETENT Selling Electrical Engineer wanted at once for India. Preference to gentlemen with some previous Indian experience, and one familiar with cotton mill drives. Not over 35.—Reply to 8719, ELECTRICAL REVIEW, 4, Ludgate Hill, London, stating commercial and engineering experience.

DRAUGHTSMEN.—Wanted immediately, two or three first-class Draughtsmen, and two or three juniors for works in London, doing general engineering work and wire-rope machinery. —Write, stating particulars, if experienced and salary required, to R. L., c/o Streets, 30, Cornhill, London. 8699

DRAUGHTSMEN wanted, for A.C. and D.C. machine work, also for switchboards and gear.—Apply, stating age, experience, and salary required, to 8588, ELECTRICAL REVIEW, 4, Ludgate Hill, London.

ELECTRICAL firm require gentleman to take charge of their works test bay. Applicant must have had experience of testing A.C. and D.C. machines up to 1000 KW.; must be a good disciplinarian, and capable of turning out work quickly and accurately.—State age and wages required, and fullest particulars to 8585, ELECTRICAL REVIEW, 4, Ludgate Hill, London.

ELECTRICAL Draughtsman used to ship work. State age, experience and salary required.—8691, ELECTRICAL REVIEW, 4, Ludgate Hill, London.

GOOD Draughtsman required, experienced in Switchgear design and Admiralty Work.—Apply stating age, experience and salary required to 8747, ELECTRICAL REVIEW, 4, Ludgate Hill, London.

JOINTER (second) about two months' work, must be used to three-core and concentric cables, own plumbing, good timekeeper. Wages 7d. — Apply stating age, experience.—R. V. WEARE, Chichester. 8710

PREMIUM Apprentice.—Large printing office requires Premium Apprentice. Splendid opportunity for smart young man. —Address, stating age, experience, public school or otherwise, 8688, ELECTRICAL REVIEW, 4, Ludgate Hill, London.

PUPIL required. Young man with some technical knowledge. Good opportunity. Premium required. Salary given.—8736, ELECTRICAL REVIEW, 4, Ludgate Hill, London.

REPRESENTATIVES for electrical firm wanted, must know a district well; good remuneration.—Write fully 8744, ELECTRICAL REVIEW, 4, Ludgate Hill, London.

SEVERAL good Draughtsmen required, experienced in either motors or switchgear. Must be quick and reliable. Permanent job and good salaries paid to suitable men.—Apply giving full particulars of past experience, age, and salary expected, to 8583, ELECTRICAL REVIEW, 4, Ludgate Hill, London.

STOKER Wanted, used to Bennis Stokers and Hand-Firing. Applications marked Stoker, with age, experience, copies of references, when at liberty and wages expected, to the MANAGER, Electricity Works, Woking, Surrey. 8748

TELEPHONE Apparatus Inspector required. Must have good bench and inspection experience in common battery work. —Apply 8722, ELECTRICAL REVIEW, 4, Ludgate Hill, London.

TELEPHONE Engineering Specialist required. Only brainy, active candidates, having modern theoretical training, and up-to-date practical experience in design and manufacture of telephones and telephone exchange equipment, particularly C.B. outfit, need apply.—Give full particulars, stating salary expected, to 8708, ELECTRICAL REVIEW, 4, Ludgate Hill, London.

SITUATIONS VACANT.—*Continued.*

WANTED at once, Electrical Engineer to supervise the installation of electric light with plant into a large country house in the North. State age, wage and fullest particulars as to experience. The appointment would be for six weeks at least.—Apply, 8723, ELECTRICAL REVIEW, 4, Ludgate Hill, London.

WANTED, for three-wire low-tension station, London district: Junior Switchboard Attendant; commencing salary, 22s. 6d. per week. First-class Battery Attendant, must be a good lead burner; wages 30s. to 35s., according to ability. Engine-Driver, with general knowledge of Belliss engines; wages 30s. Vacancy also for Premium Pupil. Applicants to state age, experience, &c., and to furnish references from whom enquiries can be made.—8735, ELECTRICAL REVIEW, 4, Ludgate Hill, London.

WANTED, Engineer to supervise the remodelling of a large steam and hot water heating installation.—Full particulars, 8724, ELECTRICAL REVIEW, 4, Ludgate Hill, London.

WANTED, Capable Electrician of good appearance, with experience in small dynamos and accumulators, as used in connection with railways using ordinary steam locomotive power. Knowledge of Spanish or Portuguese language indispensable.—Apply by letter, "SPANISH," c/o Dawson's, 121, Cannon St., E.C. 8718

WANTED, one Electrician and one Winder with A.C. and D.C. experience for large Collieries. — Reply stating age, experience and salary required 8690, ELECTRICAL REVIEW, 4, Ludgate Hill, London.

WANTED, Assistant to Mains Superintendent, used to mains records and plans, also testing. Applications, marked "Mains," stating age, experience, salary expected, with copies of references, to be sent to THE MANAGER, Electricity Works, Woking. 8692

WANTED, Clerk with electrical experience and knowledge of shorthand.—8501, ELECTRICAL REVIEW, 4, Ludgate Hill, London.

WANTED, a first-class Electrical Engineer, with practical experience in the design of Continuous-Current Machinery. Applicants should give full particulars of training and experience, age, and salary required.—Address 8552, ELECTRICAL REVIEW, 4, Ludgate Hill, London.

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APPOINTMENTS FILLED.

THE General Manager of Falkirk and District Tramways Company thanks applicants for position of Linesman, and begs to inform them that same is now filled. 8709

SITUATIONS WANTED.

Latest time for receiving 9.30 a.m., Thursday.

PROGRESSIVE RESPONSIBLE POST.

ELECTRICAL and Mechanical Engineer (34). First-class executive qualities, initiative, organisation; wide and successful record. erection and running, at home and abroad. Salary: home, £500; abroad, according to locality, &c.

Apply 8582, ELECTRICAL REVIEW,
4, Ludgate Hill, London.

(*Continued on next page.*)

SITUATIONS WANTED.—*Continued.*

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A COMPETENT Wireman; lighting, motors, telephones, &c.—C. M., 19, Yonge Park, Finsbury Park. 8733

A M.I.E.E., 15 years' supply work, station and outdoor, foreign experience, will pay bonus for effective help in securing better position.—8565, ELECTRICAL REVIEW, 4, Ludgate Hill, London.

A PRACTICAL Electrical Engineer (26), thorough mechanic, charge works installation, alternating, continuous; four certificates; London or provinces.—8567, ELECTRICAL REVIEW, 4, Ludgate Hill, London.

A PRACTICAL Mechanical Engineer, with first-class certificate, requires situation in power station, factory, or private generating plant. Take charge any running job, and carry out repairs. Small salary.—36, Elm Bank Gardens, Barnes, London, S.W. 8750

A YOUTH (20), desires post as Junior in office of consulting engineer or works, preferably London. Shops experience, knowledge of drawing; gentlemanly and educated. Nominal salary to commence. Disengaged.—8703, ELECTRICAL REVIEW, 4, Ludgate Hill, London.

ACTIVE young Engineer desires change to progressive post. Workshop, drawing office, railway experience; good technical training.—8743, ELECTRICAL REVIEW, 4, Ludgate Hill, London.

ADVERTISER desires responsible appointment, packing, forwarding, warehouse, office, showroom experience.—8738, ELECTRICAL REVIEW, 4, Ludgate Hill, London.

ADVERTISER (20) desires situation as Assistant Electrical Engineer, or will take charge of small private electric lighting plant. Excellent references. Practical and technical.—D. SMITH, 6, Searth Road, Barnes. 8729

ADVERTISER seeks situation as Wireman or as second engineer with private installation, good refs.—Apply CARPENTER, St. Mark's Road, Maidenhead. 8483

ADVERTISER, a Londoner, age 26, holding responsible position at large Yorkshire steel works, wishes to return to London or near. Exceptional knowledge of motors and electric driving, also direct-current work generally.—8664, ELECTRICAL REVIEW, 4, Ludgate Hill, London.

ADVERTISER would be glad to hear of morning engagement only—indoors or out—London district. Good all-round experience; excellent references; moderate remuneration, according to nature of duties.—8605, ELECTRICAL REVIEW, 4, Ludgate Hill, London.

AN Electrical Engineer (25), with 4½ years' experience in superintending the installing and testing of large plants for engineering works and collieries, is open for appointment.—8606, ELECTRICAL REVIEW, 4, Ludgate Hill, London.

APPRENTICESHIP wanted, electrical preferred, with turning.—BOURN, 14, Queen Street, Dover. 8731

ARMATURE Winder (young) seeks situation in manufacturing or repair shops.—Apply 8716, ELECTRICAL REVIEW, 4, Ludgate Hill, London.

ASSISTANT Wireman wants work, town or country.—B., 96, Belmont Road, South Norwood. 8741

SITUATIONS WANTED.—*Continued.*

DRAUGHTSMAN (30), disengaged, 15 years with best known firms of switch-gear makers; moderate salary.—8533, ELECTRICAL REVIEW, 4, Ludgate Hill, London.

DRAWING Office, Youth (19), no experience, small salary.—8640, ELECTRICAL REVIEW, 4, Ludgate Hill, London.

ELECTRICAL Engineer desires change; 12 years' practical experience in design of high-class A.C. and D.C. machines; at home or abroad.—Address 8643, ELECTRICAL REVIEW, 4, Ludgate Hill, London.

ELECTRICAL Engineer, at present in charge of light and power plant, wants charge of public supply undertaking. Can invest.—8534, ELECTRICAL REVIEW, 4, Ludgate Hill, London.

ELECTRICAL Engineer with Mechanical and Civil experience and good connection at home and abroad, desires first-class appointment, either as Foreign Agent or Engineer for first-class firm, or would manage Export Dept. at home.—Write "Box 1716," Willing's, 125, Strand, W.C. 8508

ELECTRICAL and Mechanical Engineer (25), with three years' thorough theoretical and practical training, seeks situation in charge of light and power plant. Has been last berth electricity works manager of one of the largest works in middle Europe. Small salary to commence. Speaks also German, Hungarian, Italian, Roumanian, and some French.—8713, ELECTRICAL REVIEW, 4, Ludgate Hill, London.

ELECTRICIAN (25) disengaged; motors, arcs, incandescent, bells, &c.; quick and reliable; anywhere.—8742, ELECTRICAL REVIEW, 4, Ludgate Hill, London.

ELECTRICIAN (26) wants sit., lighting, telephones, motors, plant.—B., 4, Claremont Place, Stepney Green, E. 8754

ELECTRICAN, Competent wireman, disengaged, good references.—G., 1, Hermitage Road, Finsbury Park. 8677

ELECTRICIAN seeks situation; wiring plant, maintenance works, institutions, country houses, hotels; own repairs. Excellent testimonials.—8514, ELECTRICAL REVIEW, 4, Ludgate Hill, London.

ELECTRICIAN-Wireman (29), competent, seeks situation. Five years' workshops, six years' wiring and maintenance; first-class (direct current) factory plant installation experience; good references.—Apply 8755, ELECTRICAL REVIEW, 4, Ludgate Hill, London.

ELECTRICIAN-Wireman disengaged, good references.—H. FERRIER, 41, Ferndale Road, Clapham. 8715

GENTLEMAN, English (age 27), requires position with electrical firm. Fluent German and Spanish, central station, travelling and office experience.—8682, ELECTRICAL REVIEW, 4, Ludgate Hill, London.

INSTALLATION Superintendent for well-known supply company seeks position with established contracting firm, to estimate for and supervise lighting, power, and private plant contracts.—8753, ELECTRICAL REVIEW, 4, Ludgate Hill, London.

JOINTER.—Plumber, disengaged, thoroughly experienced. Town or country. Excellent references.—12, Thirlmere Road, Muswell Hill. 8673

RE-ENGAGEMENT wanted. Mica Moulder and Armature Winder.—8683, ELECTRICAL REVIEW, 4, Ludgate Hill, London.

STOREKEEPER or Salesman (26), experienced; excellent references.—F. T., 131, Richmond Road, N.C. 8771

TWO Wiremen, light, bells, telephones, motors; piecework.—"ELECTRICIAN," 26, Elsanor Road, Hackney. 8739

WIREMAN wants sit. or job; motors, lighting, telephones, bells.—E. C., 65, St. John's Hill, Clapham Junction, S.W. 8732

WIREMAN, all-round hand, good references.—MAYNARD, 44, Anchor Street, Bermondsey. 8717

WIREMAN, disengaged, good all-round experience.—H., 28, Cassland Road, Hackney. 8756

(Continued on next page.)

SITUATIONS WANTED.—*Continued.*

WIREMAN, first-class, piece-work or day. — ELECTRICIAN, 16, Mornington Road, Regent's Park. 8517

WIREMAN, 12 years' experience, good references.—C. ELLIS, 32, Smith Street, Chelsea. 8516

WIREMAN disengaged; town or country, plant.—R., 4, Tottenham Square, Kingsland, N. 8666

WIREMAN disengaged, conduit, bells, telephones, plant, references.—"Electrician," 64, Rosebury Road, Fulham. 8669

WIREMAN, young, seeks re-engagement. Six years' good all-round experience; good references.—46, Hill Street, Peckham. 8635

WIREMAN'S Assistant, competent, all branches (own tools). L. Y., The Cottage, Arundel Terrace, Castlenau, Barnes. 8752

WIREMAN, young, wants work; 11 years' West-End experience.—8, Falcon Grove, Clapham Junction. 8769

WIREMAN, 18 years' experience; plant erection, lighting, telephones, bells, Stannos wiring, estimating. — ELECTRICIAN, 83, Fernlea Road, Balham, S.W. 8762

WIREMAN wants job; any distance.—T. H., Randall Lodge, Grand Drive, Raynes Park, S.W. 8740

WIREMAN (disengaged), tube or casing.—E. C., 35, Valentine's Road, Ilford. 8766

WIREMAN seeks engagement; town or country.—H. D., 84, Pelham Road, Wood Green, N. 8761

WIREMAN-Electrician, lighting, bells, power, telephones, plant, &c., disengaged; excellent references.—L.R., 26, Lindore Road, Clapham Junction. 8518

WIREMAN-Electrician, thoroughly efficient, good all-round man; highest references; any distance. — FRANCIS, Crafthole, St. Germans, Cornwall. 8759

YOUNG man seeks sit., turning, fitting, wiring, &c.; three years' technical work (electric); good refs., indentures.—8, Findhorn Street, Poplar. 8760

YOUTH (16) requires situation in electrical engineering firm, where will have opportunity to improve; been nearly two years at wiring and in workshop.—C. A. F., 38, Farnborough Avenue, Walthamstow. 8633

PARTNERSHIPS.

ELECTRICAL AND MECHANICAL

ENGINEERING Partnerships Negotiated by JOHN GLOVER AND CO., Engineering Valuers, 17, Collingwood Street, Newcastle-upon-Tyne.

Enquiries solicited from gentlemen desirous of purchasing partnerships in sound concerns, or from firms requiring partners.

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FINANCIAL Partner wanted, to place on market improved steel, copper, brass tube bending machine.—8698, ELECTRICAL REVIEW, 4, Ludgate Hill, London.

GENTLEMEN requiring Partnerships, and well-established businesses open to receive Partners with capital, are requested to communicate with R. S. PRICE, LTD., Finsbury Court, Finsbury Pavement, London, E.C., who make a speciality of Electrical Partnerships. 8728

PARTNERSHIPS.—*Continued.*

PARTNERSHIP.—Gentleman required who is a fully-qualified Mechanical and Electrical Engineer, of good address and some commercial experience, to take the general management of a most remunerative business and a partnership to the extent of £3000 to £5000. The duties would involve close and active attention and some travelling. Replies confidential, and full particulars at personal interview.—8734, ELECTRICAL REVIEW, 4, Ludgate Hill, London.

AGENCIES.

METAL THREADS.

WOLFRAM METAL and BINDERS supplied in unrivalled quality at low prices. Representatives wanted for England and America. Please address:

GUTER FADEN-GUTE LAMPE, W. R. 7754,
care of RUDOLF MOSSE ADVERTISING AGENCY,
2, Seilerstätte, Vienna I, Austria. 8600

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COMPANY, manufacturing Motor Control Gear of every kind, is open to appoint competent Agents on commission in the following districts: Birmingham, Newcastle, and South Wales.—Apply, giving full particulars of connection and experience in similar lines, 8725, ELECTRICAL REVIEW, 4, Ludgate Hill, London.

IMPORTANT firm of Arc Lamp Makers are open to appoint enterprising Agents on liberal remuneration for the Midlands, Northern Yorkshire, Scotland, and Ireland. Applicants must prove suitable experience and live connection with Power Stations, Leading Contractors, &c. Lamp of exceptional merit.—Apply 8601, ELECTRICAL REVIEW, 4, Ludgate Hill, London.

NORTH-East Coast.—Gentleman, having well-established connection amongst contractors, works and collieries, desires additional Agency. Specialty preferred. Proof of substantial turnover. Energetic representation.—Apply 8510, ELECTRICAL REVIEW, 4, Ludgate Hill, London.

WELL-known firm in Scotland, with first-class connection, desires really good Agencies; machinery, tools, engineers' requirements. State full particulars.—8770, ELECTRICAL REVIEW, 4, Ludgate Hill, London.

BUSINESSES FOR SALE AND WANTED.

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CONTRACTING and General Electrical Business, good turnover, increasing trade, easily managed; would suit young gentleman just commencing business.—8646, ELECTRICAL REVIEW, 4, Ludgate Hill, London.

GENUINE, well-established Electrical Engineer's and Talking Machine Business for sale as going concern. £400, including maintenance contracts, also stock about £240; book debts £80; no liabilities. Last year's net profits £280. Excellent reasons for disposal. In rapidly growing district. Grand opportunity for energetic business person.—8768, ELECTRICAL REVIEW, 4, Ludgate Hill, London.

(Continued on next page.)

BUSINESSES FOR SALE, &c.—*Continued.*

£100.—Electrical Contractor's Business in growing South Wales town for sale. Stock, tools and instruments. £5 weekly can be made by practical electrician, with further prospects.—8547, ELECTRICAL REVIEW, 4, Ludgate Hill, London.

£2000.—A Manufacturing Electrical Engineer's Business and Works for sale; freehold. No liabilities. Close to railway and river.—Apply 8704, ELECTRICAL REVIEW, 4, Ludgate Hill, London.

FOR SALE.

Cheap prepaid Advertisements are inserted under this heading at the rate of One Penny Per Word (minimum 1s.). Three Consecutive Insertions for the price of two, if ordered and prepaid with first insertion.
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DYNAMOS (B.T.H.), two 37-KW. 150 volt 250 amp. 6-pole 730 rev.; little used; £65 each.—A. VEREY & Co., Dover. 8574

DYNAMOS, 3000, 1500, 1000 and 750 amperes, at 6 volts, ready for delivery; also smaller sizes delivered from stock. Machines let out on hire.—CANNING & Co., Electro-Platers' Engineers, Birmingham.

ELECTRIC Ceiling Fans (50), new; 4' 6" diam.; alternating and direct; 100 and 220 volt; 56s. each.—A. VEREY & Co., Dover. 8573

ELECTRIC Fans, new, alternating; 70 100/110 volt, 100 cycles, 12" diam.; 25s.; under half cost.—A. VEREY & Co., Dover. 8572

ELECTRIC Fans, new, D.C.; large number 100—220 and 500 volt, 12" diam; 25s.; under half cost.—A. VEREY & Co., Dover. 8571

FANS 200—240 volts, continuous, swivel frame, brand new, 12 in. 25s., 10 in. 20s.—GROVES & Co., Acton, W. 8730

FOR Sale or Hire, high-class Dynamos, Motors, Alternators, Cable and Arc Lamps.—PERCY HUDDLESTON & Co., 72, Finsbury Pavement, E.C. 7848

FOR Sale, Exhibition Plant dismantled.—Triple pole switches, circuit breakers, porcelain fuse carriers, edgewise dial meters and recording ammeters, all 600 to 1500 ampere capacity. Also several 60 yard lengths 97/12 and 97/14 cable, high grade, as new, very cheap.—8519, ELECTRICAL REVIEW, 4, Ludgate Hill, London.

FOR Sale.—150 KW. Generating Set, with three-Crank Compound Engine, 230-volt Generator, 652 amps, 390 revs. Two 77 KW. Generating Sets, Willans Two-Crank Compound Engines, 220-volt Generator, 350 amps. 460 revs. 50 KW. Generating Set, 500/550-volt Generator, 385 revs. (by The Brush Electrical Co.). Two 52 B.H.P. Belliss-Siemens Electric Sets, Two-Crank Compound Engines, 110-volt Generator, 400 revs. 100 KW. Multipolar Shunt Wound Dynamo, 500/550 volts, 600 revs. New 105 B.H.P. Gas Engine, with Suction Gas Plant (by Hornsby, Stockport). Pair of high-class 11 in. Horizontal Engines. 26 in. stroke (by Marshalls). "Deutche Niles" Planing Machine, to plane 6 ft. × 32 in. × 32 in., with two Tool Boxes. Rack-Driven Planing Machine, to plane 9 ft. × 3 ft. 6 in. × 2 ft. 6 in., with Two self-acting Tool Boxes. Double-Geared Radial Arm Drilling Machine, 6 ft. arm, 2¼ in. spindle. Webster & Bennett Four-Spindle Drilling Machine, with 2 in. spindles. Three Spindle Sensitive Drilling Machine (by Alf. Herbert) ¾ in. spindles. Lathes, Planers, Shapers, Slotters, Drilling Machines, various sizes. Descriptive catalogue of 2—3000 lots of machinery in stock, free on application. Machinery let out on Hire or Sold on Purchase-Hire. Inspection invited.—THOS. W. WARD, LTD., Albion Works, Sheffield. Telegraphic Address: "Forward, Sheffield." 6216

FOR SALE.—*Continued.*

FOR Sale.—Engineer's Tools, Time Recorders, Pulleys, Hangers, Electrical Instruments, Mild and Tool Steel, &c. Particulars on application to Crescent Works, Harlesden. 8701

LANGDON-Davies 2-H.P. Motors, 200 volt, 50 periods Ter, nearly new, £10 each.—A. VEREY & Co., Dover. 8575

LIGHTING Plant. 14 B.H.P. High-speed Crossley Gas Engine, Four-polar B.T.H. Dynamo, output 36 amperes at 220 volts, complete with marble switchboard, rheostat, meters by Johnson-Phillips, tanks, silencer, belting, &c. In first-class condition, can be seen running; £65, f.o.r., or sell separately.—125, Balham Hill, London. 4609

MOTOR, 80 H.P., 440/500 volts, 540 revolutions, four-pole shunt wound.—MARTIN, 320, Witton Road, Birmingham. 8702

ONE 34 B.H. Stockport Gas Engine fitted with specially heavy flywheel, gas bag and three exhaust boxes, four G.I. tanks, four C.I pulleys, one W.I. pulley, one wood split pulley. 20-unit British Schuckert D.C. Dynamo, combined shunt and compound wound, with switch for cutting out series winding, 148 amps. at 135 volts, with wall pattern rheostat. One Thomson-Houston Recording Wattmeter, 110 volts, 150 amps. All the above are in good working order and condition, and can be easily removed. Offers invited.—For further particulars apply NATIONAL TELEPHONE Co., LTD., Crown Alley, Dublin. 8576

PORTABLE Testing Set, reading up to 10 megohms, in good condition, cheap.—Write, T., 8, Brick Street, Piccadilly. 8758

RECORDING Ammeters, two for sale; also four Johnson and Phillips Wattmeters, 100 volts, 1000-unit dial.—Apply ROBSON & COLEMAN, Haymarket, Newcastle-on-Tyne. 8687

SHUNT Wound Dynamo, by Crompton, 100-150 volts, 160 amps. Two Compound Dynamos, 105 volts, 180 amps., by G.E.C. Also 12 KW. Dynamo by Helios, Cologne, 100-140 volts, 100 amps. All in first-class condition.—HARRY H. GARDAM, Staines. 7960

THE Fareham Urban District Council invite tenders for the Old Plant at their Electricity Works, comprising engines, boilers, condenser, feed-pumps, alternators, steam and exhaust piping, valves, belts, pulleys. The whole or any item may be tendered for.—Full particulars on application to THE ENGINEER, Electricity Works, Fareham, Hants. 8705

THE following Second-hand Electric Motors for Sale.—½-H.P. Veritys' "Aston Lundell" Motor, complete, 220 volts, 1550 revs., 2·3 amps.; 7½-H.P. Veritys' Standard Motor, complete, with starter and double-pole switch, 214 volts, 1200 revs., 30 amps.; Veritys' Standard Charging Set, Motor and Dynamo, 6·3-H.P. motor, 214 volts, coupled to dynamo generating 110 volts, 35·5 amps. at 1080 revs., complete with starter and switch and charging board for ditto, complete, all in perfect order, as good as new; 4-H.P. General Electric Company's "Witton" Motor complete, 220 volts, 1240 revs., needs repair. A few spare Armatures, requiring re-winding.—Write Box 203, c/o T. B. Browne's Advertising Offices, 163, Queen Victoria Street, London. 8685

15 H.P. nearly new Motor, by Veritys, 440 volts, complete with starter, &c. 7½ H.P. Ditto, by Thomson-Houston Co. 8 H.P. Motor, 110 volts, by Waygood. Also many others in stock. —HARRY H. GARDAM, Staines. Telephone No. 98. 7961

20,000 METAL Filament Lamps, end of season stock, to be cleared cheap, voltages 25 to 125.—Prices and particulars on application to MERCHANTS' TRADING COMPANY, LIMITED, Broad Street House, E.C. 8562

(Continued on next page.)

ARTICLES WANTED.

WANTED TO PURCHASE FROM ELECTRIC LIGHTING Companies and Electrical Engineers, Dynamos, Motors, Cable, Wire, Instruments, and every description of Electrical Material, also Manufacturers' Surplus Stocks. The bulk being for re-use, high cash prices can be paid.—A. VEREY & Co., Dover. Principal in London three days a week. Telegraphic Address: "Verey, Dover."

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ACCUMULATORS, Second-hand, any type, wanted; also Dynamos and Machinery, Lead Peroxide, Old Copper Cable, Scrap Metals, and every description of Metallic Dross purchased for cash, town or country.—Write A. BROWN & SONS, 142, Lower Clapton Road, N.E. Telephone: Dalston 555.

ELECTRIC Motor.—Required, in the Midlands, one new or secondhand 150 B.H.P., D.C. 250 volt motor, with or without starting gear.—Write, with full particulars, price, speed, age, make, &c., to "MOTOR," at Horncastle's, 61, Cheapside, E.C. 8684

OLD Electric Lamp Ends, Cable and Wire bought for cash.—SMITH & Co., 2, Ranelagh Road, East Ham, London, E.

PLATINUM, in any form and quantity, purchased at highest prices by DERBY & Co., LTD., 44, Clerkenwell Road, London.

WANTED, Second-hand Generating Set, about 100 KW., 200/250 volts direct current, engine high-speed, compound, enclosed, vertical, 150/200 lbs. steam, direct-coupled to multipolar dynamo, compound or shunt. — 8726, ELECTRICAL REVIEW, 4, Ludgate Hill, London.

WANTED, two powerful Arc Lamps in series on 105 volts, alternating; must be in perfect condition.—State make and lowest price to 8714, ELECTRICAL REVIEW, 4, Ludgate Hill, London.

WANTED.—Small job lots, cheap, of bell and light materials, telephones, &c.—SKINNER, 153, London Road, Sheffield. 8751

WANTED.—15-20 H.P. shunt-wound direct-current, 220 or 110 volt, totally-closed Motor, Ediswan pattern preferred.—Give full particulars as to condition and price to 8763, ELECTRICAL REVIEW, 4, Ludgate Hill, London.

WORKSHOPS, PREMISES AND SITES TO LET OR WANTED.

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EXTENSION.—A firm of well-known Arc Lamp Manufacturers find it necessary to extend their premises, and would be prepared to combine their works with those of a similar non-competitive organisation with a view to mutual economy in certain directions.—8749, ELECTRICAL REVIEW, 4, Ludgate Hill, London.

WORKSHOPS, PREMISES AND SITES TO LET OR WANTED.—*Continued.*

FOR Sale, and affording an unique opportunity for Electric Lighting Company, fine Freehold Premises, Residence and Land; 4½ acres; exceptionally suitable for electrical station; valuable water spring. Close to good town and thickly populated manufacturing district, both having gas only. Very low price.—Apply in first instance to DAVIES, Auctioneer, Swindon, Wilts. 8706

MODEL Works at Basingstoke for sale; a bargain. One hour from London, cheap labour, railway siding into works. Spacious offices, well-lighted shops, 150 × 133 and 100 × 60, and others, all on ground floor; 2¼ acres land; nominal ground rent, low rates. Suitable for any class of trade requiring light and space, especially for electrical manufactures.—Apply to WHEATLEY KIRK, PRICE & Co., 46, Watling Street, London, E.C. 8693

MISCELLANEOUS.

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AN Advertising Department (not advertising agents), with 10 years' international experience, at present handling publicity for few first-class engineering firms, can undertake further work for one or two additional clients. All advertising (contracts, preparation and changing of copy, &c.), compiling, editing and printing of catalogues, publication of press articles, photographing and blockmaking, &c., attended to at lowest trade prices for inclusive sum per year.—Write Box 1911, Willing's, 125, Strand, W.C. 8700

APPLICATIONS for Appointments prepared with the smartest appearance, and testimonials neatly copied. Satisfaction assured. Write immediately.—PREMIER TYPEWRITING COMPANY, Spon Lane, West Bromwich. 8686

APPLICATIONS for Appointments effectively arranged, ensuring favourable consideration. Numerous unsolicited testimonials. Expert advice. Write now.—HERBERT GREATOREX, Beechwood, Matlock. 8561

LEAD Burning, Tanks and Accumulators, Oxy-Acetylene, Welding and Cutting. Lowest Prices.—Works, 3, College Street, Putney. 7928

LIST of Country-House Installations, compiled from periodicals, &c. Invaluable to Contractors. 100 (any district) 1s. 3d.; lot (950) 10s.—Cash with order to E. F. SAMSON, 43, Emsworth Road, Portsmouth. 8663

NOTICE to Manufacturers.—A firm of Electrical Contractors in large Lancashire town will shortly be holding a well-advertised Electrical Exhibition. Will firms desirous of having their goods displayed please send full details of their specialities, and state upon what terms they propose to send their samples. Only one firm's goods of each class will be represented. The above firm wishes to hire or purchase an Electric Sign and Control Switch, and will be pleased to have particulars from Manufacturers desirous of tendering. Full details must be sent in the first instance.—Apply 8509, ELECTRICAL REVIEW, 4, Ludgate Hill, London.

REDUCE your current consumption by using the Tyler Time Meter, 10s. net; efficient, simple, cheap.—THE TYLER METER Co., 70, Ondine Road, East Dulwich. 8737

(Continued on next page.)

MISCELLANEOUS.—*Continued.*

WANTED in every town in the United Kingdom, where electric energy is available, an energetic and enterprising firm of Electrical Engineers to take up the sale of a thoroughly reliable Electric Flat Iron, on which good profits can be secured.—8765, ELECTRICAL REVIEW, 4, Ludgate Hill, London.

Where Advertisements are to be answered to a given number at the ELECTRICAL REVIEW Office, Applications for names and addresses of the Advertisers will be entirely disregarded, and Letters giving incorrect Box Numbers will be destroyed.

SUCCESSFUL INVENTORS

HAVE THEIR IDEAS WORKED OUT AND MODELS MADE AT

Wm. K.-L. DICKSON'S

(Late with EDISON 1881-1896)

SCIENTIFIC AND MECHANICAL LABORATORIES,

4, Denman Street, Piccadilly Circus, London, W.

Telephone, GERRARD 4823. Telegrams: "LAURIONITE," LONDON.

J.H. BUTCHER & CO. TRANSFERS BIRMINGHAM

A GREAT SAVING

may be effected by marking

Indicators, Dials, Switchboards, Telephones, Motors, Machinery, by means of

BUTCHER'S TRANSFERS—Permanent, Legible & Cheap.

Tell us your Requirements, and we'll submit free sketches.

J. H. Butcher & Co., 506, Moseley Rd., Birmingham.

ENGELBERT & CO., London,

LUBRICANT MANUFACTURERS.

Vide full advertisement in last issue, also next issue.

THE STIRLING BOILER CO., Ltd.,

Head Office: 25, VICTORIA STREET, WESTMINSTER, S.W.

See Illustrated Advertisement last week.

ELECTRIC

Tube, Muffle, and Crucible

FURNACES

Furnaces for the Incineration of Coal.

The Mahler-Cook Bomb Calorimeter.

JOHN J. GRIFFIN & SONS, LTD.

Kemble Street, KINGSWAY, LONDON, W.C.

WE KNOW

and we want

YOU TO KNOW TOO

that if you put a dozen of our **"Triumph" Dry Batteries** away in your cellar, and forget all about them for TWO YEARS, there will be no need for you to throw them on the scrap heap. Just put them back into stock with the last lot in, and you won't be able to tell the difference with an ammeter. Why go on losing money and reputation with Batteries that won't keep long in stock, when you can buy the above at 1/4 each, 15/- doz. subject.

REMEMBER—THE DRY BATTERIES THAT KEEP GOOD IN STOCK.

ARCHIBALD J. WRIGHT, Ltd.

Manufacturing Electricians,

LEYTON GREEN RD., LONDON, N.E.

KIRCHOFF'S LAWS

AND THEIR APPLICATION.

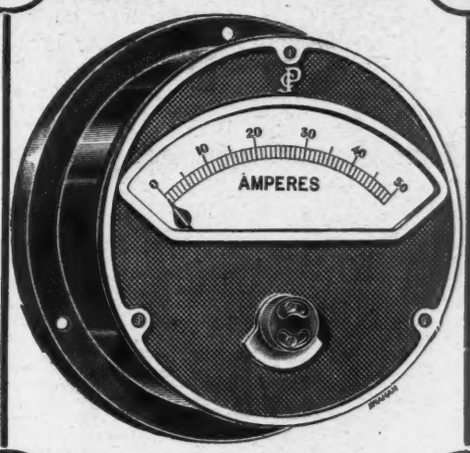
Paper Covers. 1s. 6d. Post Free.

By E. C. RIMINGTON.

H. ALABASTER, GATEHOUSE & CO., 4, Ludgate Hill, LONDON, E.C.

J. PITKIN & Co.,

ACCURATE. RELIABLE.



WRITE FOR LISTS.

56, RED LION ST., E.C.

ANGLO-SWISS ACCUMULATOR CONSTRUCTION Co

49 NEWGATE ST. LONDON, E.C.

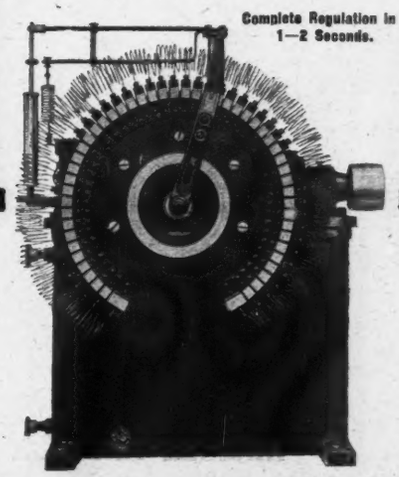
THURY

EXTRA-RAPID AUTOMATIC

FIELD REGULATOR

for C.C. and A.C.

Complete Regulation in 1—2 Seconds.



ELECTRO-MAGNETIC REGULATION; NO ELECTRIC CONTACT.

C. C. CAMPART

SOLE AGENT FOR GREAT BRITAIN & COLONIES

49 NEWGATE ST. E.C.

ELECTRICAL REVIEW.

BINDINGS AND CASES.—Subscribers and others can have their half-yearly numbers bound handsomely in Black Cloth at the rate of 4s. per volume. Cases for binding are also supplied at 2s. 6d. each.—4, Ludgate Hill, London.

COLUMBIA DRY CELLS

HEAP & IOHNSON, *Contractors to the Admiralty, &c.,* **28, Hatton Garden, E.C.**

SIEMENS

SHOP FITTINGS

FOR

'TANTALUM' LAMPS

NEW DESIGNS.

½ Full Size.

D N 582.

(Patent.

Lantern D N 582 meets a long-felt want as it dispenses entirely with the use of set screws for globe fixing. The globe is automatically fixed, and can be removed in a moment, but cannot fall out accidentally.

With Copper Hood and Clear Globe (exclusive of lamps) *26/-* each.

With Enamelled Iron Hood (Green) Do. do. *23/9* each.

REVISED AND EXTENDED FITTINGS LIST JUST ISSUED. COPY SENT ON APPLICATION.

SIEMENS BROTHERS DYNAMO WORKS LIMITED.

Head Office:
CAXTON HOUSE, WESTMINSTER, S.W.
Telephone: GERRARD 860.
Telegrams: "SIEMBRALOS, LONDON."

Supplies Dept. & Stores:
39, UPPER THAMES STREET, E.C.
Telephone: LONDON WALL 8270
Telegrams: "SIEMOTOR, LONDON."

"Tantalum" Lamps & Fittings:
TYSSEN STREET, DALSTON, N.E.
Telephones: CENTRAL 8388 & DALSTON 4.
Telegrams: "SIEMODYN, LONDON."

Works: STAFFORD.

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SIEMENS

WIRES AND CABLES

OF ALL DESCRIPTIONS.

SIEMENS CABLES BEING LAID AT BEDFORD BY THE CORPORATION ELECTRICITY DEPARTMENT.

SIEMENS BROTHERS & CO. LIMITED.

Head Office:
CAXTON HOUSE, WESTMINSTER, S.W.
Telephone: GERRARD 860.
Telegrams: "SIEMENS, LONDON."

Apparatus Department:
WOOLWICH, KENT.
Telephone: WOOLWICH 62.
Telegrams: "SIEMENS, WOOLWICH."

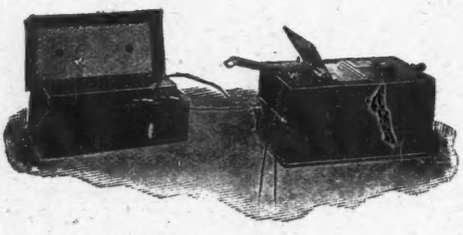
Works: WOOLWICH, KENT, and DALSTON, N.E.

BRANCHES:

BIRMINGHAM.	GLASGOW.	SHEFFIELD.	CALCUTTA.	SINGAPORE.	SYDNEY.
BRISTOL.	MANCHESTER.	JOHANNESBURG.	BOMBAY.	PENANG.	MELBOURNE.
CARDIFF.	NEWCASTLE.	CAPE TOWN.	MADRAS.	RANGOON.	TORONTO.

SCRAP YOUR GRANDFATHER

'S WHEATSTONE BRIDGE with its keys and its plugs, its Galvanometer, its levelling screws, its battery, its half-illegible figures, its sums in mental addition, and its perennial worry.



EVERSHED'S BRIDGE-MEGGER

has none of these old-world adjuncts. It measures any resistance from one ohm to a million as a Bridge, and from zero to forty megohms as a Megger. It reads direct without addition or calculation.

EVERSHED & VIGNOLES, Ltd.

Acton Lane Works,
CHISWICK, LONDON, W.
Telegrams: "DOROTHEA, LONDON."
Telephone: HAMMERSMITH 231.

The "WATKIN" SWITCH

(Patent)

AND

ELECTRIC CURRENT CONTROLLER.

The **ONLY** means of Regulating Electric Current to save **80** per cent. when turned down.

SEE

FARADAY HOUSE REPORT

For
Lamps, Fans, Heaters,
Cooking Stoves, Irons,
Motors, &c., &c.
Either A.C. or D.C.

AS SUPPLIED TO:—

H.M. GOVERNMENT.
INDIAN GOVERNMENT.
AUSTRALIAN GOVERNMENT.
S. AFRICAN GOVERNMENT.
N. ZEALAND GOVERNMENT.
NATIONAL PHYSICAL LABORATORY.
LONDON COUNTY COUNCIL.
CITY OF LONDON AND
MANY OTHER CORPORATIONS.
SHIPPING COMPANIES.
RAILWAY "
HOSPITALS AND ASYLUMS.
THE PRIME MINISTER'S
OFFICIAL RESIDENCE.
THE NOBILITY.
LEADING ELECTRICIANS
AND
PUBLIC GENERALLY.

THE

Adams Watkin Company, LIMITED.

36, Victoria Street, London, S.W.

Telephone: 684 Victoria. Telegrams: Coleperch, London

NOTICES RELATING TO PATENTS.

Latest time for receiving, 9.30 a.m. Thursday.

John E. Raworth,

Queen Anne's Chambers, 30, The Broadway, Westminster, S.W. **Chartered Patent Agent.**

S. SOKAL, Chartered Patent Agent

Certified Austrian Patent Attorney (Patentanwalt), Specialist for German Patents, 55, CHANCERY LANE, LONDON, W.C.

THE 'PATENTEE'S HANDBOOK.' By J. G. LORRAIN, M.I.E.E., M.I.Mech.E., CHARTERED PATENT AGENT. Gives full information and advice to intending Patentees. Sent post-free on application to Mr. J. G. LORRAIN, Norfolk House, Norfolk Street, Strand, London, W.C.

NOTES ON THE PATENTS AND DESIGNS ACT, 1907

By Messrs. LLOYD WISE & CO., Chartered Patent Agents.

Can be obtained from their Offices, 46, Lincoln's Inn Fields, London W.C. (Price 1s.).

THE PROPRIETORS of Patent No. 12656, of 1908, for "Improvements in and relating to Arc Lamps," is desirous of entering into negotiations with manufacturers or capitalists for the exploitation of such patent in the United Kingdom by sale or license.

Address—FELL & JAMES,
1, Queen Victoria Street,
London, E.C. 8694

TROLLEY Head, Non-Fouling Speciality, Patent No. 27832, (simplified). Offers invited for Manufacturing Licence or sell outright. Samples on electric cars been in successful operation for months.—Address Patentee, T. Houldsworth, 121, Warren Road, Washwood Heath, Birmingham. 8579

INVENTORS, before Patenting, write for "Advice upon Patents." Gratis.—KINGS PATENT AGENCY (Chartered Registered Patent Agents), 165, Queen Victoria Street, London. 8767

OFFICIAL NOTICES.

Latest time for receiving, 9.30 a.m. Thursday.

COUNTY OF LONDON.

THE LONDON COUNTY COUNCIL invites tenders for Wiring and Fittings for Electric Lighting of the St. Mark's Road and the Haverstock Hill Schools.

Persons desiring to submit tenders may, on and after June 27th, inspect the drawings and obtain the specifications, forms of tender, &c., on application to the Chief Engineer of the Council, Mr. Maurice Fitzmaurice, C.M.G., at the County Hall, Spring Gardens, S.W., upon payment to the Cashier of the Council of £1 in respect of each school. This amount will only be returned if a *bonâ fide* tender is submitted. Full particulars of the work and conditions of contract may be obtained at the County Hall before the payment of this fee.

The contractor will be bound to pay to all workmen employed by him in and about the execution of the contract, or any part thereof, wages at rates not less, and to observe hours of labour not greater, than the rates and hours set out in the Council's list, and such rates of wages and hours of labour will be inserted in and form part of the contract by way of schedule. Full particulars of the Council's Standing Orders on these matters are given in the *London County Council Gazette*.

Tenders must be upon the official forms, and the instructions therein must be strictly complied with.

No tender received after 11 a.m. on JULY 6th, 1910, will be considered.

The Council does not bind itself to accept the lowest or any tender, and it will not accept the tender of any person or firm who has withdrawn a tender after the same had been opened, unless the reasons for withdrawal were satisfactory to the Council.

G. L. GOMME,
Clerk of the London County Council.

County Hall, Spring Gardens, S.W.,
June 20th, 1910. 8711

THE SALFORD CORPORATION.

THE SALFORD CORPORATION invite Tenders for the Supply, Delivery and Erection at their Electricity Works, Frederick Road, Pendleton, of a BORE HOLE PUMPING PLANT.

Particulars may be obtained from the Borough Electrical Engineer, Electricity Works, Frederick Road, Pendleton, on receipt of a deposit of Two Guineas, which will be returned provided a *bona fide* tender is sent in, and not withdrawn. Extra copies 10s. each, which is not returnable.

Sealed Tenders endorsed "Tender for Pumping Plant," to be delivered to me on or before noon on MONDAY, JULY 18th, 1910.

L. C. EVANS,
Town Clerk.

Salford. 8707

OFFICIAL NOTICES.—*Continued.*

BOROUGH OF HORNSEY.

THE TOWN COUNCIL are prepared to receive Tenders for the Wiring and other work in connection with the installation of electric light in the Council's Stroud Green School, Woodstock Road, Finsbury Park, N.

Forms of Tender and Specifications, and all information in regard to the work, may be obtained on application to Mr. NORMAN STANILAND, Borough Electrical Engineer, at the Electricity Works, Tottenham Lane, Hornsey, N., on any morning between the hours of 10 and 12 o'clock. A sum of 10/6 must be deposited with the Borough Treasurer, Municipal Offices, Southwood Lane, Highgate, before the Specification can be delivered; this sum will be returned on receipt of a *bona fide* tender.

Tenders, endorsed "Tender for Electric Lighting," must be delivered not later than 10 a.m. on SATURDAY, the 9th JULY, to the Secretary for Education, 206, Stapleton Hall Road, Stroud Green, N.

The Town Council, or the Education Committee, do not bind themselves to accept the lowest or any tender. 8696

COUNTY BOROUGH OF ROTHERHAM

THE CORPORATION are prepared to receive Tenders for the Supply of Cable according to the requirements of the Department between the 1st AUGUST, 1910, and the 31st JULY, 1911, as follows, namely:—

Single Vulcanised Bitumen Covered Cable of various sizes. Further particulars can be obtained upon application to the BOROUGH ELECTRICAL ENGINEER.

The person whose tender is accepted will be required to enter into a contract which will contain the usual Fair Wages Clause.

Tenders, endorsed "Tenders for Cable," to be sent to me not later than the 9th JULY next.

By order,
W. J. BOARD,
Town Clerk.

Town Hall,
Rotherham,
23rd June, 1910. 8745

COUNTY BOROUGH OF ROTHERHAM

THE CORPORATION are prepared to receive Tenders for the Supply of Electricity Meters, according to the requirements of the Department, between the 1st AUGUST, 1910, and the 31st JULY, 1911. Ampere Hour Meters of sizes and maximum currents of 2, 5, 10, 25 and 50 amperes. The supply pressure is 230 and 460 volts. Further particulars can be obtained upon application to the BOROUGH ELECTRICAL ENGINEER.

The person whose tender is accepted will be required to enter into a contract, which will contain the usual Fair Wages Clause.

Tenders endorsed "Meters" to be sent to me not later than the 9th JULY next.

By order,
W. J. BOARD,
Town Clerk.

Town Hall,
Rotherham,
23rd June, 1910. 8746

LLANDAFF AND DINAS POWIS RURAL DISTRICT COUNCIL.

Whitchurch Electric Lighting.

THE COUNCIL are prepared to receive Tenders for the Supplying and Erecting of E.H.T. Switchgear, Transformers, Distribution Switchboard and Fittings, and the providing and laying of Electric Light Mains, Boxes, &c., at Whitchurch, near Cardiff, in accordance with Specifications, Plans, &c., which may be seen, and Forms of Tender obtained, at the office of Messrs. HERBERT LEWIS & FLETCHER, Consulting Engineers, Prudential Buildings, St. Mary Street, Cardiff.

Sealed Tenders, duly endorsed, to be in my hands not later than MONDAY, 4th JULY, 1910.

The Council do not bind themselves to accept the lowest or any tender.

M. WARREN,
Clerk to the Council.

Park House, 20, Park Place,
Cardiff
15th June, 1910. 8695

(*Continued on page 21.*)

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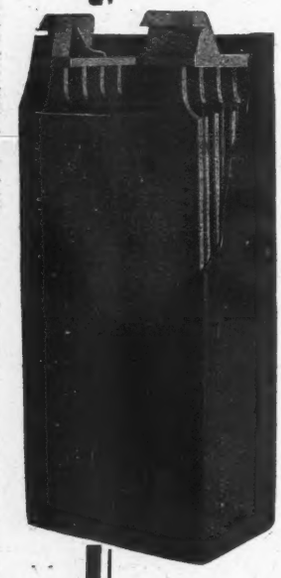

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LONDON OFFICE: 39, VICTORIA STREET.

OFFICIAL NOTICES.—*Continued from page* 19.

COMMONWEALTH OF AUSTRALIA.

Postmaster-General's Department,
Melbourne, 28*th April*, 1910.

TENDERS are invited up to 2nd August, 1910, for the Supply and Delivery of 1,820 Private Letter Box Fronts to the Postmaster-General's Department in the States of Victoria, Queensland, South Australia, and Western Australia.

Tender Forms and Specifications may be obtained at the Commonwealth Office, London.

JOHN QUICK,
Postmaster-General. 8621

COMMONWEALTH OF AUSTRALIA.

Postmaster General's Department,
April 12*th*, 1910.

TENDERS are invited up to 6th July, 1910, for the Supply of Cordless Switchboards, to the Postmaster-General's Department in South Australia.

Tender Forms and Specifications may be obtained at the Commonwealth Office, London.

JOHN QUICK,
Postmaster-General. 8236

COUNTY BOROUGH OF NEWPORT.

ELECTRICITY DEPARTMENT.

TENDERS are invited for the Supply and Erection of ONE WOODEN WATER COOLING TOWER, natural draught, with a capacity of 200,000 gallons per hour.

Specification may be had on application to the Borough Electrical Engineer, on receipt by the Treasurer to the Corporation of a deposit of £3, such deposit to be returned on receipt of a *bona fide* tender. Extra copies of specification will be supplied at the rate of 2s. 6d. each, such sum not being returnable.

Tenders to be delivered, addressed to the Town Clerk, in the envelope provided, by the first post on FRIDAY, JULY 8th, 1910.

The lowest or any tender will not necessarily be accepted.

By order,
H. COLLINGS BISHOP, M.I.E.E.,
Borough Electrical Engineer and Tramways Manager.

Town Hall,
Newport, Mon.
June 21*st*, 1910. 8721

OFFICIAL NOTICES.—*Continued.*

COMMONWEALTH OF AUSTRALIA.

Postmaster-General's Department,
Melbourne, *April*, 1910.

TENDERS are invited for the Supply to the Postmaster-General's Department in New South Wales, of One Dust Extractor, electrically driven, to work on a 24-volt direct current circuit.

Tender Forms, Specifications and General Conditions may be obtained at the Commonwealth Offices, London.

JOSIAH THOMAS,
Postmaster-General. 8720

BOROUGH OF ROYAL TUNBRIDGE WELLS.

THE LIGHTING COMMITTEE invite Tenders for the Supply of High and Low Tension Paper-insulated Cables.

Copies of Specification and Tender Form may be obtained from the BOROUGH ELECTRICAL ENGINEER, Stanley Road, Tunbridge Wells.

Sealed Tenders, endorsed "Tender for Cable," to be sent in by JULY 9th, 1910, to the Town Clerk, Town Hall, Tunbridge Wells.

The Corporation will not be bound to accept the lowest or any Tender.

W. C. CRIPPS,
Town Clerk. 8712

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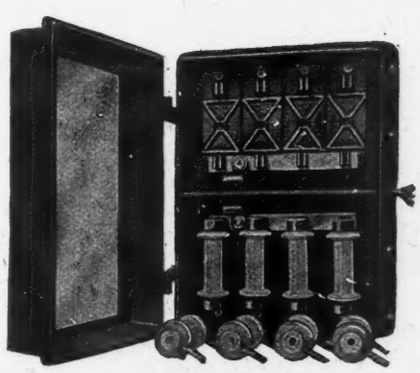

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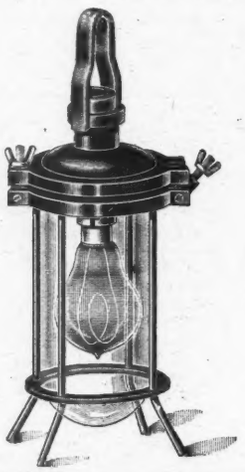

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Card Index to Important Articles appearing in the "Electrical Review," of June 10 and 17, 1910.

Central Station Practice: On Slinging Pipework. *Illus.* By S. Lees. Elec. Rev. 66, June 10, 1910, p. 969

Industry: Debate on the Effects of Free Trade or Protection on the Electrical Industry.
Elec. Rev. 66, June 10, 1910, pp. 940-944
June 17, 1910, pp. 1007-1010

Insulation: Mica Tubes without Paper. *Illus.*
Elec. Rev. 66, June 10, 1910, pp. 970-971

Lighting: The Calculation of Illumination. *Illus.* By C. Toone.
Elec. Rev. 66, June 10, 1910, pp. 959-961

Lighting: Street Lighting: Electricity *v.* Gas.
Elec. Rev. 66, June 10, 1910, pp. 969-970
June 17, 1910, p. 1015

Power: The Greenock Electricity Undertaking. *Illus.*
Elec. Rev. 66, June 10, 1910, pp. 955-959

Power: Electricity in Factories.
Elec. Rev. 66, June 10, 1910, pp. 944-945

Textile Industry: The "Gasing" of Thread by Electricity. *Illus.*
Elec. Rev. 66, June 10, 1910, p. 953

Trade and Commerce: The Electrical Trade of India.
Elec. Rev. 66, June 10, 1910, p. 971

Commercial Development: Commercial Advancement of Electric Supply. By A. C. Cramb. (I.M.E.A.)
Elec. Rev. 66, June 17, 1910, pp. 980-982

Commercial Development: Notes on the Commercial Progress of Electricity Undertakings. By H. Collings Bishop. (I.M.E.A.)
Elec. Rev. 66, June 17, 1910, pp. 982-984

Industry: The Effects of Tree Trade or Protection,
Elec. Rev. 66, June 17, 1910, pp. 1011-1013

Internal Combustion Engines: A Large Allèn Engine for Melbourne. *Illus.* Elec. Rev. 66, June 17, 1910, pp. 1013-1014

Tramways: The Tramway Congress. (*To be continued*).
Elec. Rev. 66, June 17, 1910, p. 1014

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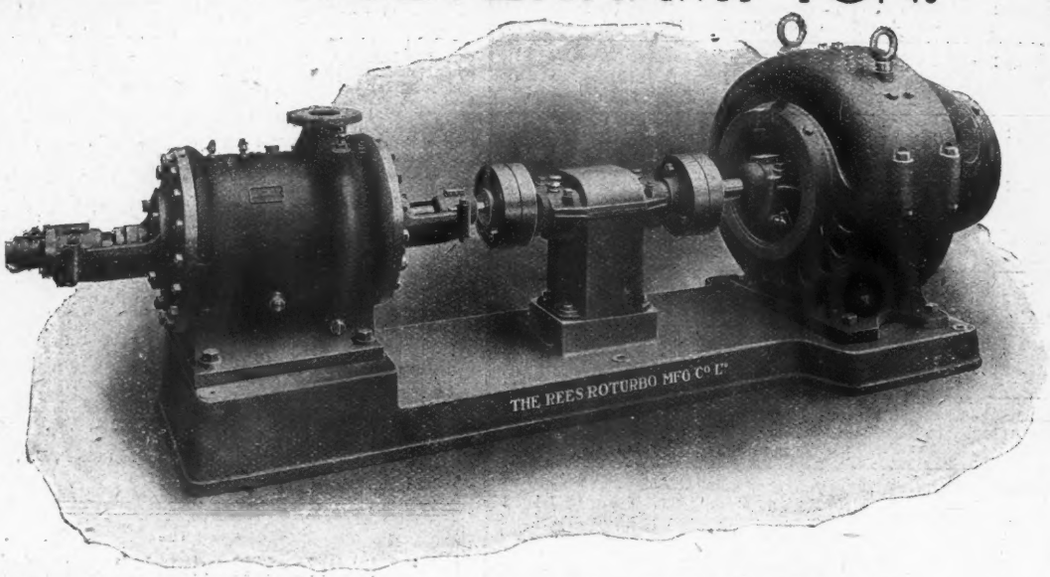

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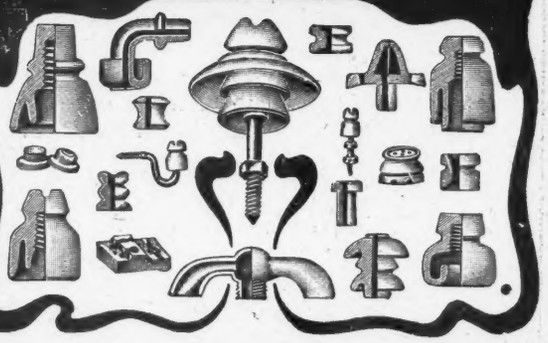

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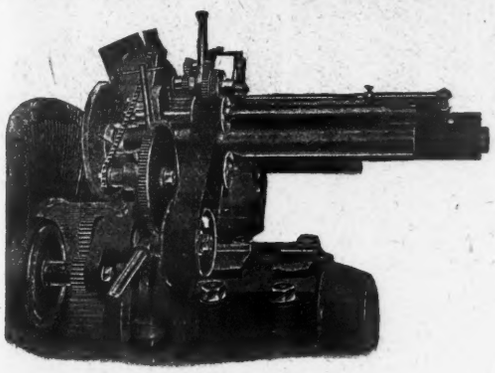

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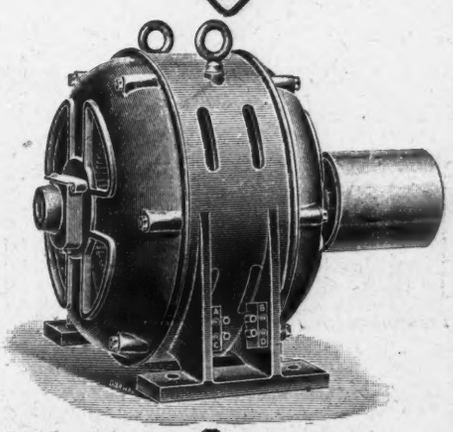

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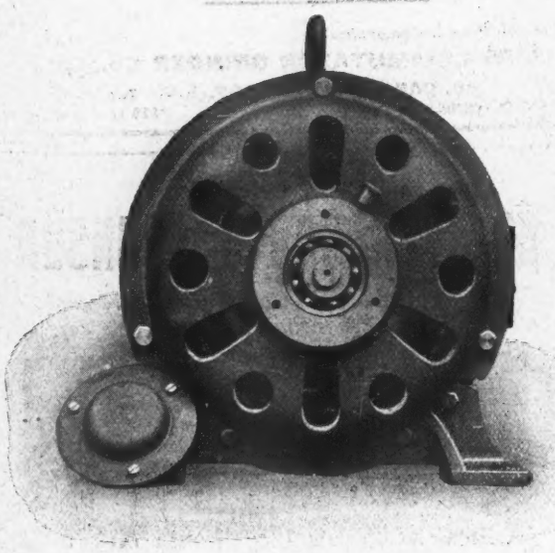

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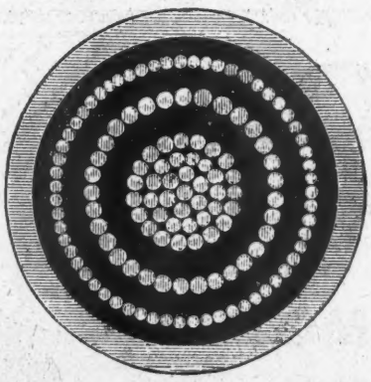

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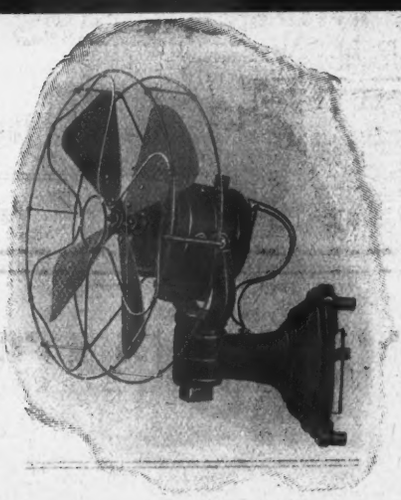

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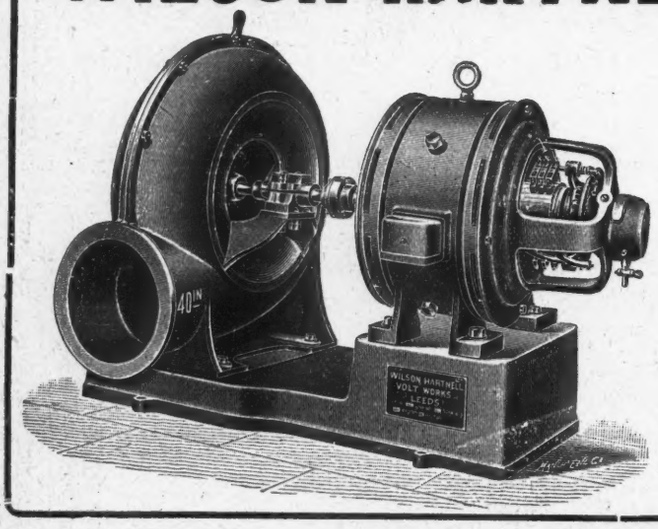

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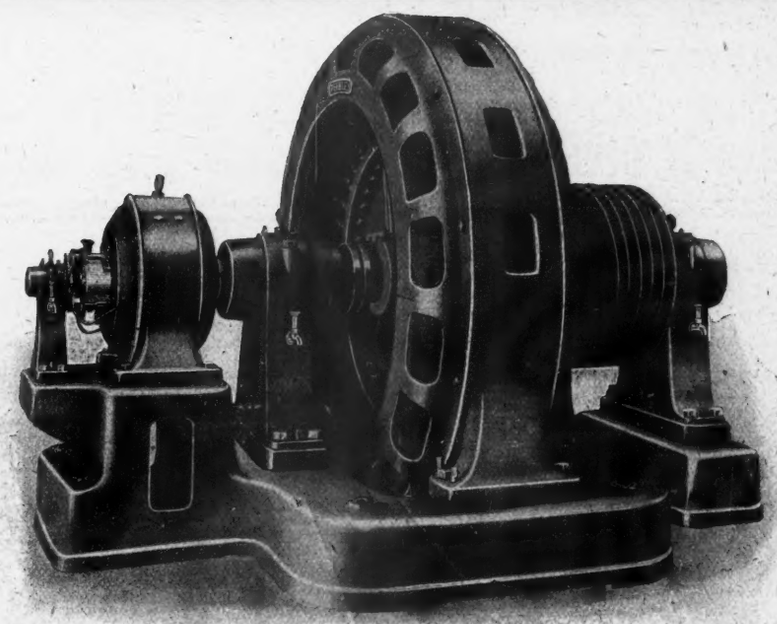

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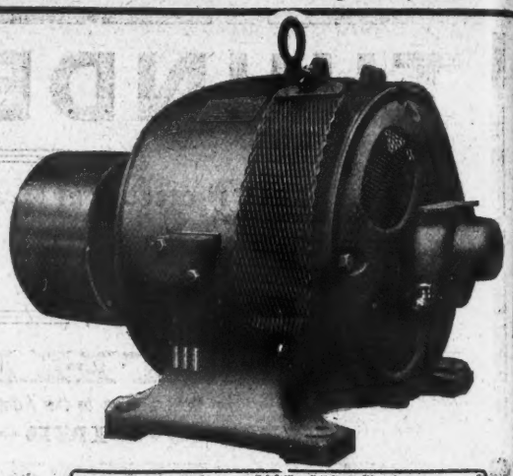

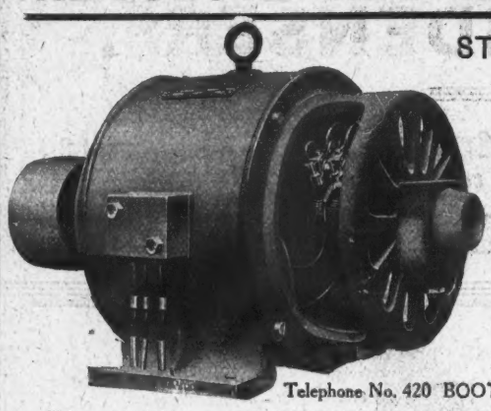

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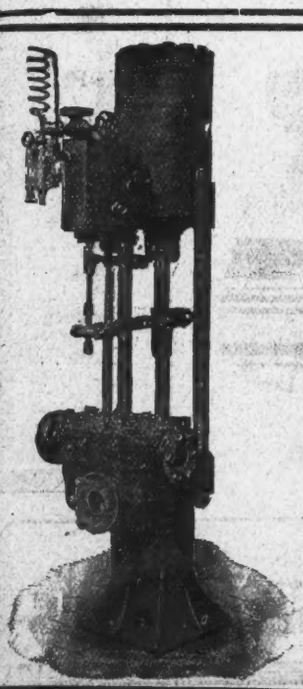

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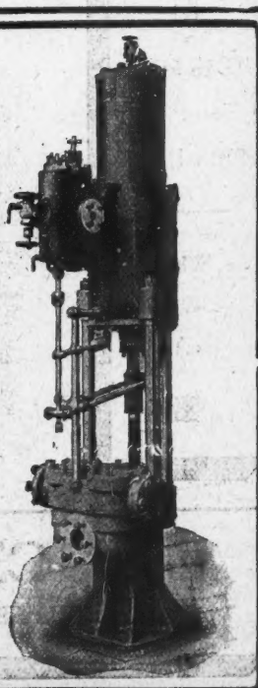

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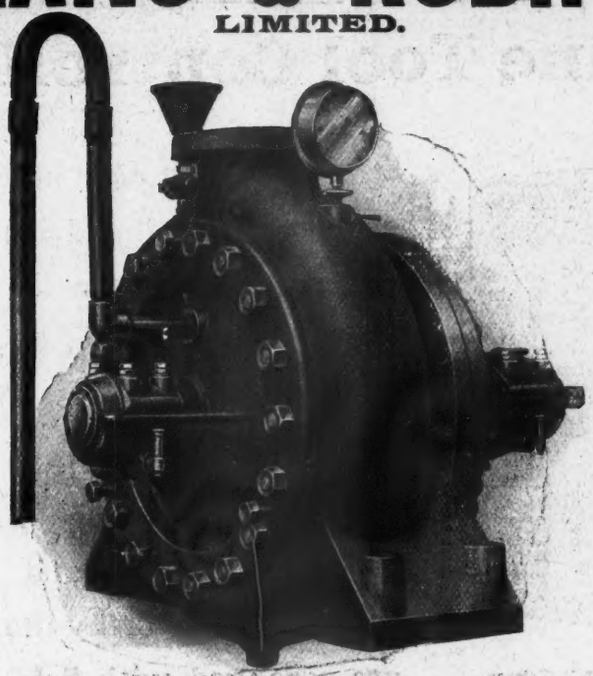

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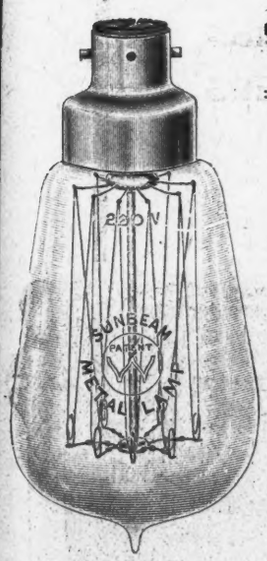

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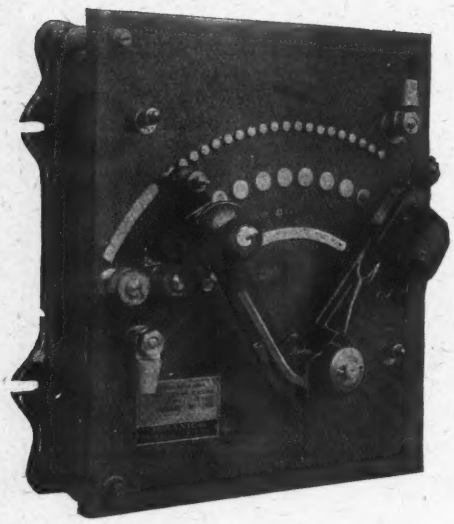

Button Contact Type with No-Volt Release showing maximum speed position).

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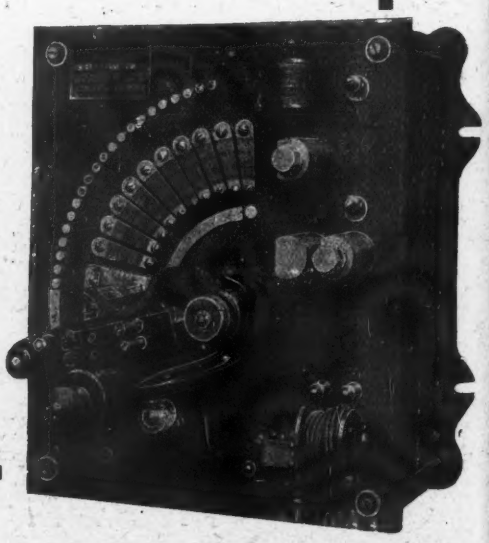

Renewable Contact Type with No-Volt and Overload Release (showing position when Motor is stopped).

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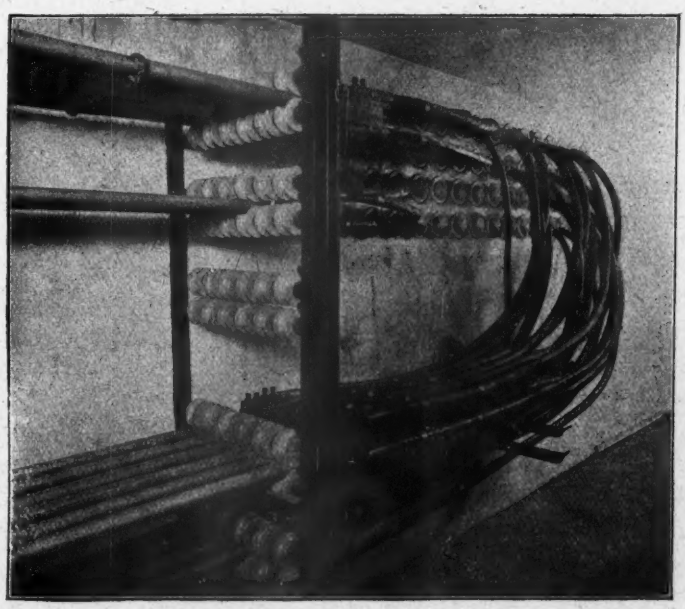

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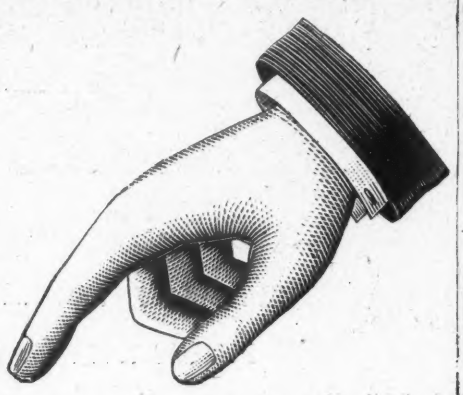

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CONTRACTORS' COLUMN.

[The following information is published in the interests of electrical contractors and others who are seeking for openings for new business. Considerable expense is incurred in the production of this column, and every care is taken to ensure that the information is new and accurate, but it will be understood that in a matter where so many correspondents are engaged, and where the amount of information to be handled is very large, this cannot always be guaranteed. If alleged inaccuracies are reported to the Editors, they will be fully investigated.]

ABERDEEN.—Alterations and improvements at the Palace Theatre; the Manager.

ACCRINGTON.—Additions to offices, &c., Ewbank Works, for Entwisle and Kenyon. Shop and extensions to premises, Peel Street, for Foulds and Porter.

ADLINGTON.—New warehouse, for T. Gerard & Son, Ltd., Adlington Mill, Adlington. Proposed new elementary school; County Architect, Preston.

ALTRINCHAM.—Proposed enlargement and improvement of Senior Conservative Club premises in Market Street (about £700).

AMBERGATE (Derbyshire).—Proposed public hall; Secretary, First Conference Estate, Ltd., 95, Chancery Lane, London.

ASHFORD.—Extensive alterations to business premises, High Street, for Chas. Clemetson & Son, drapers.

ASHILL (near Ilminster).—Alterations and additions to Council Schools, for Somerset C.C.; Cottam & Samson, architects, Taunton.

BARDSLEY.—Extensions to works of T. Kerfoot & Co., Bardsley.

BARNARD CASTLE.—New chapel at the North-Eastern County School; W. D. Caröe, architect, 3, Great College Street, Westminster, S.W.

BARNSLEY.—Sewage works extension (£3,500); Borough Surveyor.

BARNSTAPLE.—Alterations to business premises, Joy Street, for E. Thomas, draper.

BARROW.—Fire station; J. W. Smith, surveyor.

BATH.—New Sunday schools, for Widcombe Baptist church.

BATLEY.—Extensions to works, for Newsome, West & Co., Ltd., woollen manufacturers, Staincliffe. New offices and warehouse, Victoria Mills, for C. Robinson & Co., Ltd., woollen manufacturers.

BEDWAS.—Twenty officials' houses, for the Bedwas Building Co.; G. Kenshole, architect, Station Road, Bargoed.

BELFAST.—Veterinary establishment in Chichester Street, for S. Thompson; W. J. Fennell, architect, 2, Wellington Place, Belfast. Proposed rebuilding of Ulster Hospital (£12,000).

BIRKDALE.—Sewage scheme and refuse destructor for the U.D.C. (£25,000).

BLACKWOOD (Mon.).—New premises in High Street, for the Tredegar Industrial Co-operative Society, Ltd.; A. F. Webb, architect, 60, High Street, Blackwood. Workmen's Home; W. Ebley, High Street, Blackwood.

BLOXWICH.—The item *re* "public baths" appearing under this heading in our issue of June 3rd should have been under Bolton. We regret any inconvenience which may have been caused by this error.

BOGNOR.—Congregational Sunday Schools, London Road.

BOURNEMOUTH.—Proposed completion of St. Luke's Church, Winton (£4,500). Additions to West Howe Hospital (£754); F. A. Grigg, builder. Proposed rebuilding of the National Sanatorium, for the Governors.

BRADFORD.—Enlargement of business premises, 80, Otley Road, for Mr. Barraclough, piano dealer. Improvements at the Court House (£675).

BRIDLINGTON.—Proposed conversion of the People's Palace into town hall and offices, for the T.C.

BRIMINGTON.—Church Institute (£1,600); Vicar, parish church.

BRISTOL.—Bakery extensions; Bristol Co-operative Society.

BROADSTAIRS.—Prince Albert Inn to be rebuilt; Reeve & Reeve, architects, Margate. House, South Cliff Parade, for Canon W. H. Robins.

BROMSGROVE.—New Primitive Methodist Church at Catshill.

BURTON-ON-TRENT.—Extensive alterations at the Bank Square Skating Rink.

BURY.—Extensions to workhouse (£8,700); J. Isherwood, Clerk to the Board of Guardians, Bury.

CADISHEAD (near Manchester).—Business premises, Liverpool Road, for F. C. Brew & B. Brewington.

CAERLEON (near Newport, Mon.).—Tinhouse and assorting room, for the Caerleon Tinplate Co.

CARLIN HOW (Yorks.).—Forty-eight houses, for the Skinningrove Iron Co.; W. R. Robinson, architect, West Road, Loftus.

CARNARVON.—Additions to Post Office; R. Jones, builder, Llandwrog. Additions and alterations to Carmel C.M. Chapel; R. Ll. Jones, architect, 14, Market Street, Carnarvon. New Roman Catholic schools, for the Governors.

CHATHAM.—Extensions to premises, for the Co-operative Society.

CHESTERFIELD.—Buildings at the Cattle Market, Queen's Park Road; Borough Surveyor, Salter Gate, Chesterfield.

CHIPPING ONGAR (Essex).—Alterations to kitchen in the administrative block at the Children's Homes, for the Hackney Union; F. R. Coles, Clerk to the Guardians, Sidney Road, Homerton, N.E.

CLAYTON-LE-MOORS.—New school; H. Littler, County Architect, Preston.

CLEWER (near Windsor).—Probable re-erection (after fire) of the Royal Albert Laundry, Albert Street; Mrs. Barrows, proprietress.

COLDSTREAM.—Additions to Public Schools; A. M. Porteous, clerk.

COVENTRY.—New Sunday schools, for St. Margaret's parish; T. F. Tickner, architect, High Street, Coventry.

CRANBROOK.—Alterations, &c., to infirmary; T. H. Crampton, clerk, Board of Guardians.

DARLINGTON.—Business premises, Gladstone Street, for Lancaster & Berry. Higher elementary school, Gladstone Street, for the T.C.; G. Winter, Borough Surveyor.

DERBY.—Probable reinstatement, after fire, of premises, Leaper Street, for King, Howman & Co., yeast manufacturers.

DOWLAIS.—Rebuilding Bethania Congregational Church (£6,000).

DURHAM.—Chapel (£3,000); Governors, St. Hilda's College.

EARLESTOWN.—School extensions; H. Littler, County Architect, Preston.

ELLESMERE.—Business premises and stores, for the Co-operative Society, Ltd.; the Secretary. Proposed Roman Catholic school; Cheshire Education Committee.

EPPING.—New infirmary, master's house and alterations to laundry, for the B.G. (£5,950); Mr. Tooley, architect, Buckhurst Hill.

FARNLEY (near Leeds).—New school (550 places); Leeds Education Committee.

FENCE (near Burnley).—Reading room and club, at Old Laund, for Vicar and Wardens of Fence Church.

FOXFORD.—New R.C. Chapel for Rev. Father Hunt.

GATESHEAD.—Four cottages (£2,400); J. Craven, builder, 432, Westgate Road, Newcastle.

GOSPORT.—Proposed new church at Bridgemary; Rev. W. E. Bristow, Vicar of St. Thomas, Elson.

GRANTHAM.—New drill hall and alterations at the barracks, for the Lincs. Territorial Association; Scorer & Gamble, architects, Bank Street, Chambers, Lincoln.

HALIFAX.—Probable re-erection, after fire, of Spring Edge Works, King Cross, for Lees & Lees, oilcloth manufacturers.

HANDSWORTH (near Birmingham).—Wesleyan Sunday Schools, Somerset Road (£3,000); A. McKewan, architect, Colmore Row, Birmingham; T. Elvins & Sons, builders, Soho Hill, Handsworth.

HANLEY.—Extensive alterations to business premises, for J. H. Ball & Sons, furnishers, Trinity Street.

HAPTON AND PADIHAM.—Increased school accommodation; H. Littler, County Architect.

HEBDEN BRIDGE (Yorks).—Wesleyan Sunday Schools (£2,000).

HEMSWORTH (near Wakefield).—Business premises and houses, for D. Sainter & Sons; W. E. Richardson, architect, Rothwell, Leeds.

HEREFORD.—Extension of fruit market (£5,000); Borough Surveyor, Hereford T.C.

HINCKLEY.—Addition to public baths; Surveyor to the U.D.C.

HORWICH.—Extensions to Victoria Mill.

HUDDERSFIELD.—Alterations and additions to Crosland Moor Church Schools; J. Berry, architect, 3, Market Place. Alterations and additions to Primrose Hill Liberal Club premises; N. Culley, architect, 13, John William Street.

ILKESTON.—Secondary school; G. H. Widdows, County Architect, Derby.

IMMINGHAM (near Grimsby).—Primitive Methodist church (£1,000); G. H. Allison, architect; J. T. Wilkinson, builder.

JOHNSTONE.—New Roman Catholic school (£3,000); Rev. Father Nyham, St. Margaret's R.C. Church.

KIDDERMINSTER.—Additions to Caldwall Mills, New Road, for Greatwich, Ltd.

KIDWELLY (Carmarthenshire).—Probable re-erection (after fire) of business premises, Llandefeilog, for M. Jones.

KILTIMAGH (Co. Mayo).—New residence and gate lodge, for Col. H. B. Jordan; T. F. Slevin & Sons, architects, 23, Stephen's Green, Dublin.

KINGSBURY.—School, Wood End; J. Willmott, architect, 6, Waterloo Street, Birmingham.

KNARESBOROUGH.—New school (300 places), for the West Riding of Yorks. C.C.

LEAVENING (near York.).—New Primitive Methodist Sunday Schools; A. Barnes, contractor, Malton.

LEEK.—New braid shed off New Street, for Clemesha Bros.

LEIGH-ON-SEA.—Infectious Diseases Hospital; J. W. Leversedge, architect, Leigh-on-Sea.

LIMEHURST.—Sewage purification works for the R.D.C.; H. L. Hinnell, engineer, 41, Corporation Street, Manchester.

LITTLE HULTON.—Sinking new colliery off Peel Lane; Tyldesley Coal Co., Ltd.

LLANGIAN (N. Wales).—Church hall; J. Wheldon Griffith, the Parsonage.

LONDON (S.E.).—New hall for boxing competitions in Pocock Street, Blackfriars road (seat 6,000).

(Deptford, S.E.).—Restoration of St. Nicholas' Church (£5,000); the Vicar.

(E.).—Bioscope theatre, Erie Street, Mile End Road, for C. D. Cox.

(East Ham, E.).—Cinematograph palace, Plashet Lane; Sir J. Bethell, M.P., Woodford.

(Silvertown, E.).—Factory, &c., Hall's Wharf, North Woolwich Road, for Pinchin, Johnson & Co. Machinery store, Thames Sugar Refinery, for H. Tate & Sons, Ltd.

(Stratford, E.).—Warehouse, &c., Carpenter's Road, for Wylie & Co. Offices, &c., Barber's Road, for Cookman Bros., tallow melters, 11, Deanery Road, Stratford, E.

(Hackney Wick, N.E.).—Church; Hare & Bodley, architects, Gray's Inn Square, W.C.

(Acton, W.).—Development, for building purposes, of Goldsmiths' Company Estate, East Acton.

(Hendon, N.W.).—Fourteen houses, Willifield Way and Hogarth Hill; Hampstead Tenants, Ltd., 1, Hampstead Way, N.W. Eleven houses, Willifield Way and Hampstead Way; Second Hampstead Tenants, Ltd. Vicarage, St. Jude's Church, Garden Suburb; E. L. Lutyens, architect, 29, Bloomsbury Square, W.C. Nineteen houses, Hoop Lane and Golders Green Crescent; Edmondsons, Ltd., builders, 9, Winchmore Hill, N.

(Pimlico, S.W.).—Reconstruction of the Royal Standard Music Hall, Victoria Street; F. Matcham & Co., architects, 9, Warwick Court, Holborn, W.C.

(E.C.).—Markets, Charterhouse Street (£17,200); E. C. & J. Keay, Ltd., builders, 47, Victoria Street, S.W. Rebuilding factory, 60 and 61, Red Lion Street, Clerkenwell; W. Pamphilon, architect, 21, Finsbury Pavement, E.C.

(W.).—Buildings in Dean Street, Oxford Street; Godson & Sons, builders, Pembroke Works, Kilburn Lane, N.W. Conversion of 269, Oxford Street, into ideal public-house; H. & E. Lea, builders, 10, Brewer Street, W. New theatre on site of the Café Cavour, Leicester Square, for H. B. Irving. New Presbyterian Church, Uxbridge Road; Rev. J. B. Logie, minister, Elthorne Park Church.

(Bromley, E.).—Nurses' classroom and addition to drug stores at the District Sick Asylum, Devons Road; J. & W. Clarkson, architects, 186, High Street, Poplar, E.

(Stepney, E.).—Alterations to hall at the York Minster public-house, Philpot Street; G. R. Farrow.

(Whitechapel, E.).—Building on site of 90, Whitechapel High Street; W. E. Clifton, architect, 7, East India Avenue, E.C. Steel and iron building in Leman Street and Tenter Street East, for the Co-operative Wholesale Society, Ltd.

(Lambeth, S.E.).—Additions to the Wesleyan Church, Lambeth Road; Gordon & Gunton, architects, Finsbury House, Blomfield Street, E.C.

(Brixton, S.W.).—Addition to premises, 1, 3 and 5, Tunstall Road, for Morley and Lanceley.

(Hampstead, N.W.).—Buildings in Finchley Road; T. M. Garrood, architect, 337-8, Birkbeck Bank Chambers, Holborn, W.C.

(Edmonton, N.).—New central Wesleyan hall and adaptation of church for Sunday school purposes (£10,400).

(Stoke Newington, N.).—New sorting office; J. Rutherford, H.M. Office of Works, Carlisle Place, S.W.

(Hackney, N.E.).—Additions to the Eton Mission Church, Gainsborough Road; W. L. Franklin. Laundry, Baker's Hill; J. Hamilton and Son. Warehouse premises at 44, Shacklewell Lane; J. Hamilton and Son.

(Holborn, W.C.).—Nurses' home at the London Homœopathic Hospital, Great Ormond Street; E. T. Hall, architect, 54, Bedford Square, W.C.

(W.C.).—Reconstruction of the Middlesex Music Hall, Drury Lane; F. Matcham & Co., architects, 9, Warwick Court, Holborn, W.C.

LUTON.—Rebuilding of women's infirmary; Clerk, Board of Guardians, Luton.

MAIDSTONE.—Offices, workshops, stores, &c., St. Peter Street, for the Kent C.C.; County Surveyor, West Borough Chambers, Maidstone. Probable re-erection, after fire, of printing works, Stone Street, for Hobbs & Sons (damage, £30,000).

MATLOCK.—New United Methodist Church (£3,000).

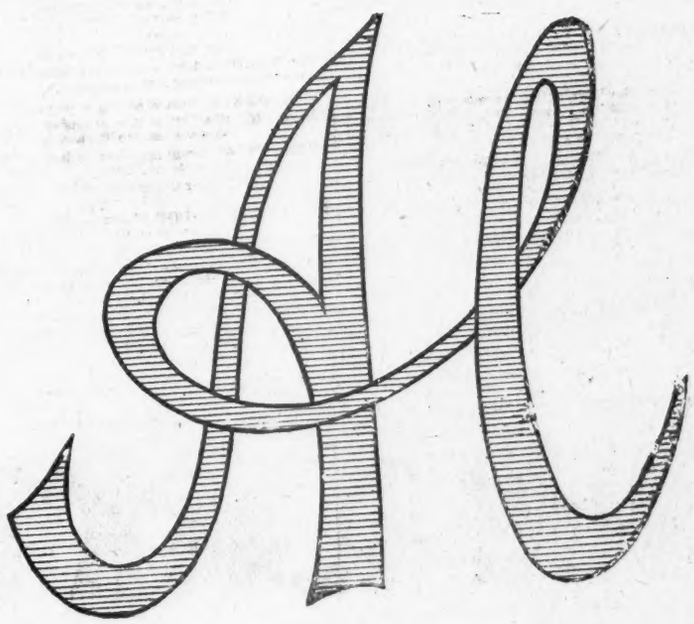
MANCHESTER.—Important extensions at the Manchester University. New Roman Catholic schools in Ancoats.

MARGATE.—House and motor garage, Wyndham Avenue, for W. L. Bennett.

MERTHYR TYDFIL.—New buildings for the Merthyr Central Laundry Co., Ltd.; C. M. Davies, architect, 112, High Street, Merthyr. Electric theatre, High Street; G. S. Valentine, architect, 19, Charing Cross Road, London, W.C.

(*Continued on page* xxvi.)

ALUMINIUM WIRE, STRIP, SHEET & SECTIONS.



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CONTRACTORS' COLUMN.—*Continued from page xxiv.*

MELTHAM.—New Baptist Church (£2,000). New shed, Spink Myers Mills, for Quarmby & Sykes, mungo manufacturers.

MINEHEAD.—New public hall (£3,500); T. Andrew, architect, Minehead.

MITCHAM.—Eight shops, Seely Road; J. Sands, builder. New school and additions to Singlegate School; Surrey Education Committee.

NEWCASTLE-ON-TYNE.—Large transit shed, The Quay, for the T.C.; City Engineer.

NEWHAVEN.—Extensions to isolation hospital; F. Rayner, architect, Newhaven.

NEWTON ABBOT.—Proposed additions to Infirmary (£5,000); F. Horner, Clerk to the Board of Guardians.

NORTHFLEET.—Additions to works, The Shore, for Bevans Branch of the Associated Portland Cement Manufacturers. Probable re-erection (after fire) of residence, "Marlboro," Istead Rise, for F. A. Dickeson. Addition and alteration to the Northfleet Tavern, for H. E. Porter.

NORTH SKELTON (YORKS).—Working Men's Club; E. Bowes, 14, William Street, North Skelton.

NORTHWICH.—Sewerage scheme (£7,875), and pumping station near Whalley Road, for the U.D.C. Additions to the Gladstone Club.

NORTON (YORKS).—New Wesleyan Church (£5,000); J. Sanderson, architect, Stockton-on-Tees.

NORWICH.—New Baptist Church, in Silver Road.

ONICH (N.B.).—New church (£1,650); Rev. J. N. Maclennan.

ORRELL and UPHOLLAND (near WIGAN).—New schools; H. Littler, County Architect, Preston.

PATRICROFT (near MANCHESTER).—Probable reinstatement (after fire) of portion of George Street Mill, for Arnold & Dean.

PENGAM (near CARDIFF).—Colliery developments, two new pits to be sunk by the Powell Duffryn Steam Coal Co.

POOLE.—Alterations at the workhouse laundry; P. E. L. Budge, Clerk to the Guardians, Union Offices, 189, High Street, Poole. New engine house at flour mills, St. Clement's Lane; W. H. Yeatman & Son.

PORTSMOUTH.—Additions to the workhouse infirmary (463 beds), to be lit by by electricity, for the B.G.: G. E. Smith, architect, 6, Braybrooke Terrace, Portsmouth. Municipal housing scheme with 46 model houses (£12,000).

RATHDRUM.—Proposed conversion of fever hospital into sanatorium for consumptives; P. Short, Chairman of the Board of Guardians.

RAWTENSTALL.—Extension of car-shed, workshop and offices, for the Corporation.

READING.—New drill hall at rear of the Territorial Headquarters, St. Mary's Butts; Berks County Territorial Association. Children's and ophthalmic wards, &c., for the Governors of the Royal Berks Hospital; Herman Burney, secretary.

REDCAR.—Extensive alterations and additions to Zetland Schools, for the North Riding of Yorks. C.C.; J. C. Wrigley, Secretary, County Hall, Northallerton.

RETFORD.—Extension of St. Alban's Church (£2,000); the Vicar.

RIBCHESTER (near PRESTON).—Proposed extensive additions to the workhouse, for the Preston B.G. (£18,000); Corbishley & King, architects.

ROMFORD.—New business premises in Market Place; E. J. Little, architect, Hornchurch Road, Romford.

SALTBURN.—New high school for girls; J. C. Wrigley, Education Department, County Hall, Northallerton.

SENNEN (CORNWALL).—Alterations and additions to buildings, at St. Aubyn's, Trevilly (Lord St. Levan's estates); Steward, Chyanegloe, Marazion, Cornwall.

SHEFFIELD.—New theatre to replace Alexandria Theatre; A. Winstanley, architect, St. Annes-on-Sea.

SHELF.—Alterations and additions to the Variety Club, Stone Chair; G. R. Oddy, architect, Northowram, Halifax.

SHIREBROOK (NOTTS).—Public hall and picture palace, for the Shirebrook and District Public Halls Co., Ltd.; E. B. Dean, architect, Mansfield; J. and F. L. Parsons, builders, Mansfield.

SHIRLEY (BIRMINGHAM).—New Baptist Church in Stratford Road; Rev. J. W. Young, Shirley.

SITTINGBOURNE.—Alterations and additions to Drill Hall; H. & R. L. Cobb, architects, 53, Lincoln's Inn Fields, London, W.C.

SOUTHEND-ON-SEA.—Alterations and additions to Leigh Road and Brewery Road Schools, for the T.C.; E. J. Elford, Borough Engineer.

SPITAL.—New observation pavilion, and alterations and additions to the administrative block at the Sanatorium, for the Wirral Joint Hospital Board; J. H. Davies & Sons, architects, 14, Newgate Street, Chester.

STOCKPORT.—Public library (£12,000), for the T.C.

SLAITHWAITE (near HUDDERSFIELD).—Alterations and additions to the Conservative Club; J. Kirk & Sons, architects, Huddersfield.

SOUTHAMPTON.—Chapel, lodge and offices at Hollybrook Cemetery; Borough Engineer, Municipal Offices, Southampton.

STANNINGTON (NORTHUMBERLAND).—New wing at the Philipson Children's Sanatorium (£4,000); J. H. Watson, general hon. secretary, 140, Sidney Grove, Newcastle.

SUNDERLAND.—Proposed extension of Town Hall (£35,000); J. W. Moncur, Surveyor to the T.C.

SWANSEA.—Alterations at the *Swansea Daily Post* offices. New Christian Science Church, School, &c., corner of Mirador Crescent and Walter Road; G. Moxham, architect, 39, Castle Street, Swansea.

TAUNTON.—New workshops in Magdalene Street, for Spiller & Brown, builders.

TUNBRIDGE WELLS.—New Primitive Methodist manse (£850).

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WALTON (near REIGATE).—Drill hall, Duffield Lane; Sir Geo. Riddell, 1, Portland Place, London, W.

WATFORD.—Additions to warehouse for the Watford Manufacturing Co.

WESTHOUGHTON.—New school; County Architect, Preston.

WESTON-SUPER-MARE.—New abattoirs; S. C. Smith, clerk to U.D.C.

WINGATE (Co. DURHAM).—Extensive alterations to the old theatre, for the Wingate Empire Theatre Co.

WINSFORD (CHESHIRE).—New schools, for the C.C.; R. Stubbs, architect Broad Green, Liverpool.

WITHNELL (near CHORLEY).—Alterations and additions to St. Paul's schools Jolly & Buckley, architects, Chorley.

WOODFORD BRIDGE (ESSEX).—King Edward Memorial House in connection with Dr. Barnardo's Homes, Boys' Garden City (£2,000).

WOODLEY.—New works; Mayall & Massing, Ltd., Oldham.

WORKSOP.—Permanent chapel at St. Cuthbert's College; Sir Aston Webb, architect, 19, Queen Anne's Gate, Westminster, S.W.; Lowe & Sons, contractors, Burton-on-Trent.

WREXHAM.—Hall, Bradley Road, for the Bishop of Menevia.

YEOVIL.—Additions to brewery, for Brutton & Sons, Ltd. Alterations and additions to Preston Schools; C. & C. B. Benson, architects, Yeovil.

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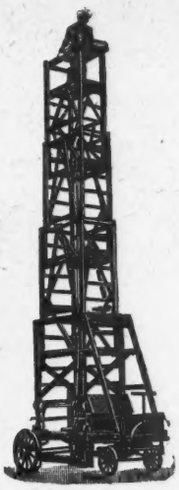

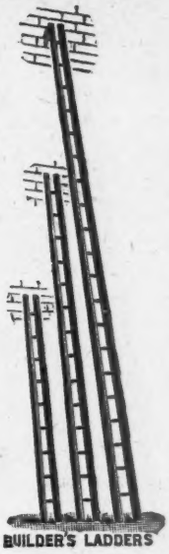

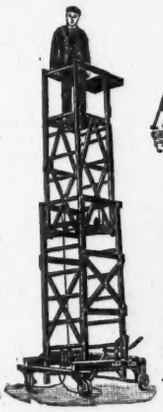

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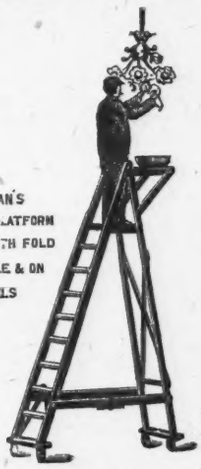

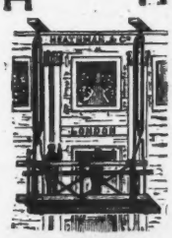

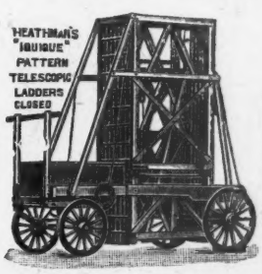

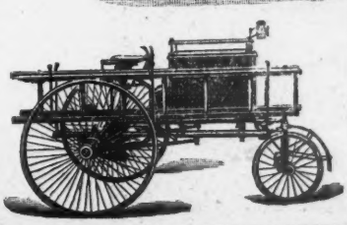

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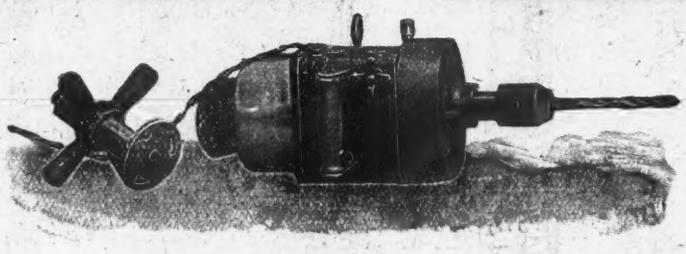

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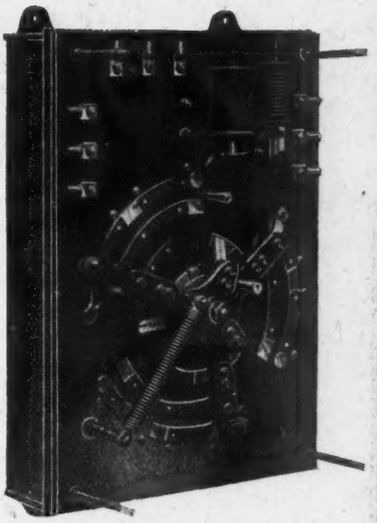

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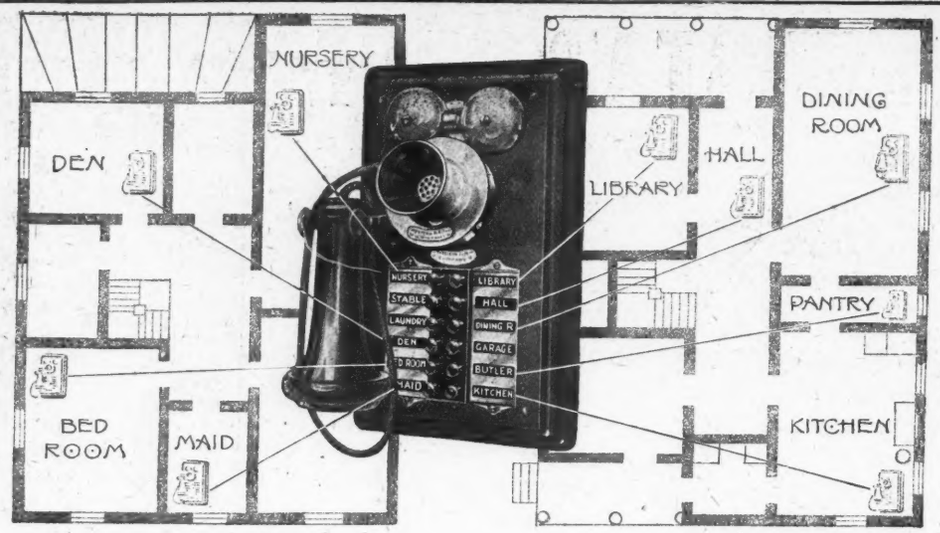

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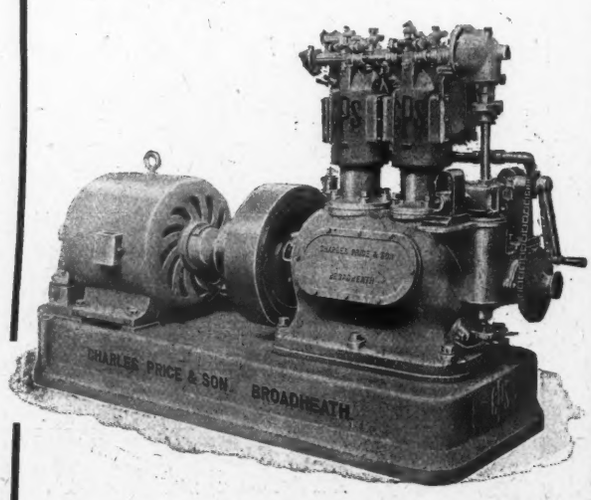

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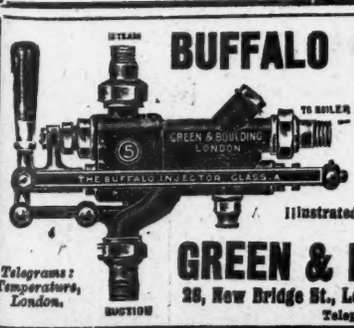

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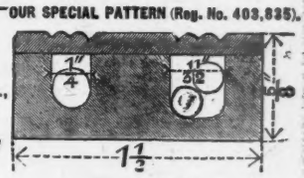

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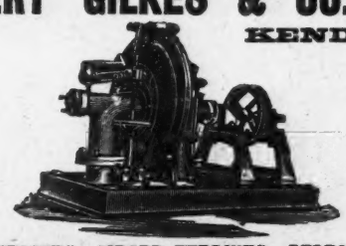

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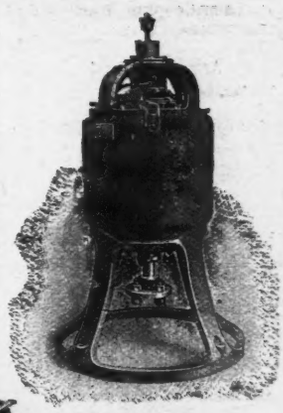

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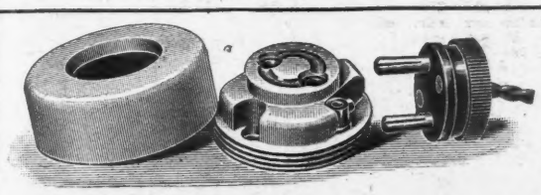

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Continued on page xxxvi.

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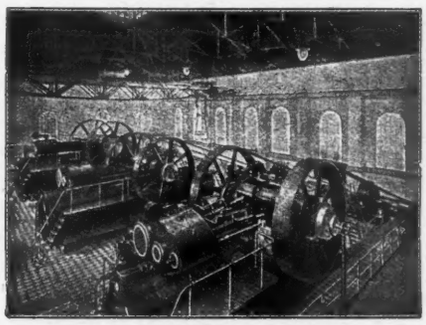

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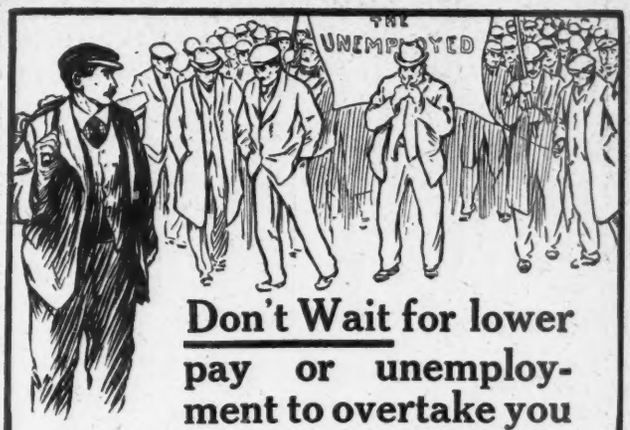

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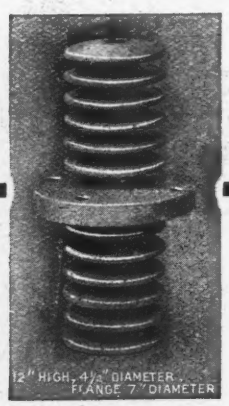

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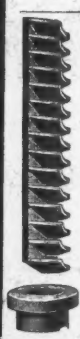

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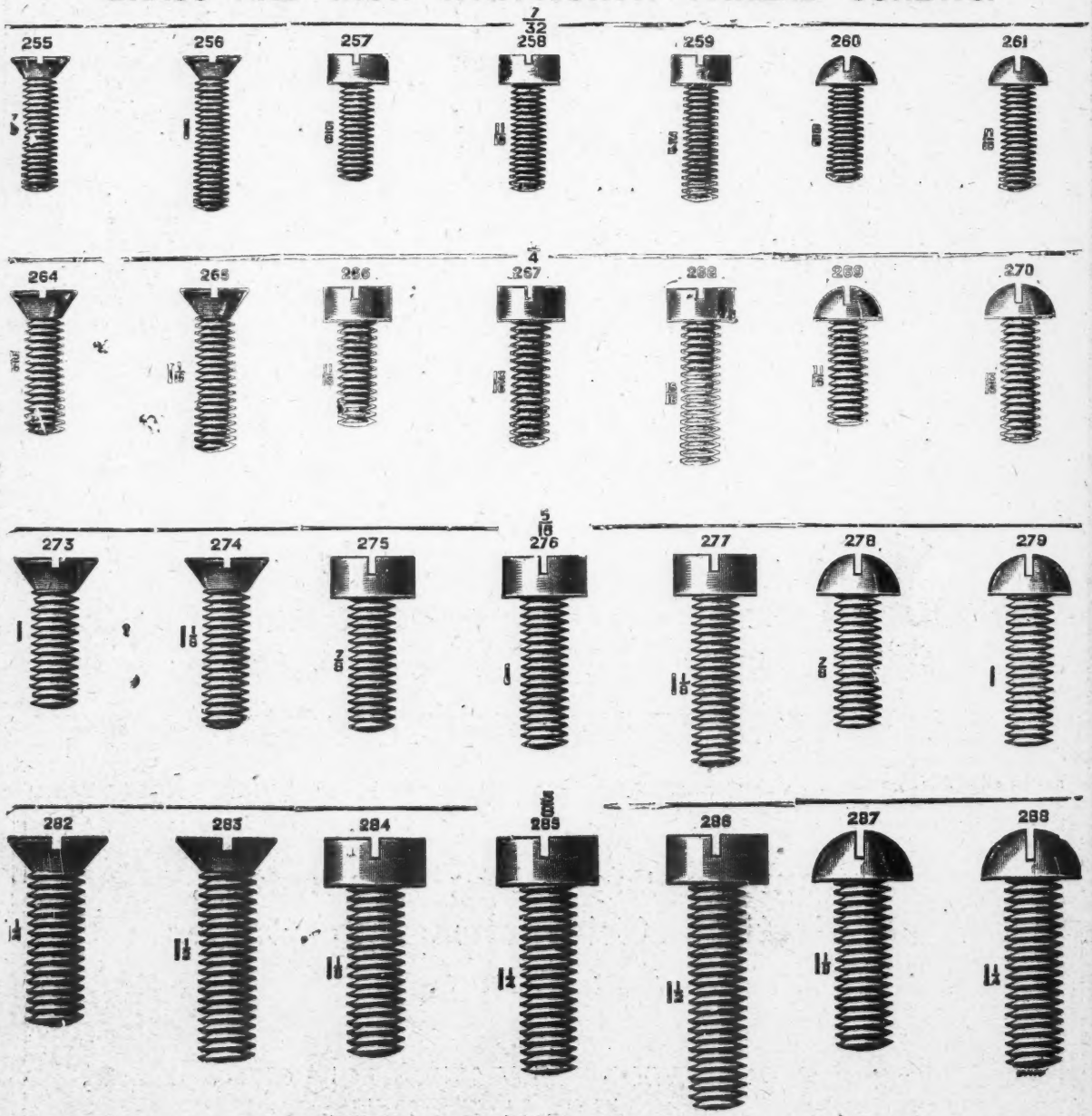

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